

HOW TO BECOME A LAPTOP TECHNICIAN FROM ZERO TO HERO

Short Circuit
S5 Stage Problems
Protect Switch

FIXING TOTALLY DEAD LAPTOP

Laptops total loss of power is characteristic of damage without any indicator lights at all. if in the field I have found damage such as an electric power indicator immediately off, power flash / flashing etc. While there is still an indicator light when it is not totally dead, there is still an indicator light, the author intentionally separates and assembles the characters - the damage characteristics on the laptop are based on the different characteristics of the execution technique.

Kang Solihin



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FOREWORD :

Bismillahirrohmanirohim, This book Revision is the latest book refinement which are specifically dedicated for all friends who already have bought book in previous years who may still not be able to be master laptop service techniques. Also for friends in the forums that the authors hope this book can represent questions that often arise about laptop service.

I apologized to all my tech friends, because of my busy offline business which forced me to reduce online activities, but for friends who had problems / difficulties to understanding all the contents in this books please stay in touch with me at any time the door is always wide open for you (come). Or for anyone who wants to do a comparative study for 1 week at my place, please set a schedule & make administrative payments according to the price we have set.

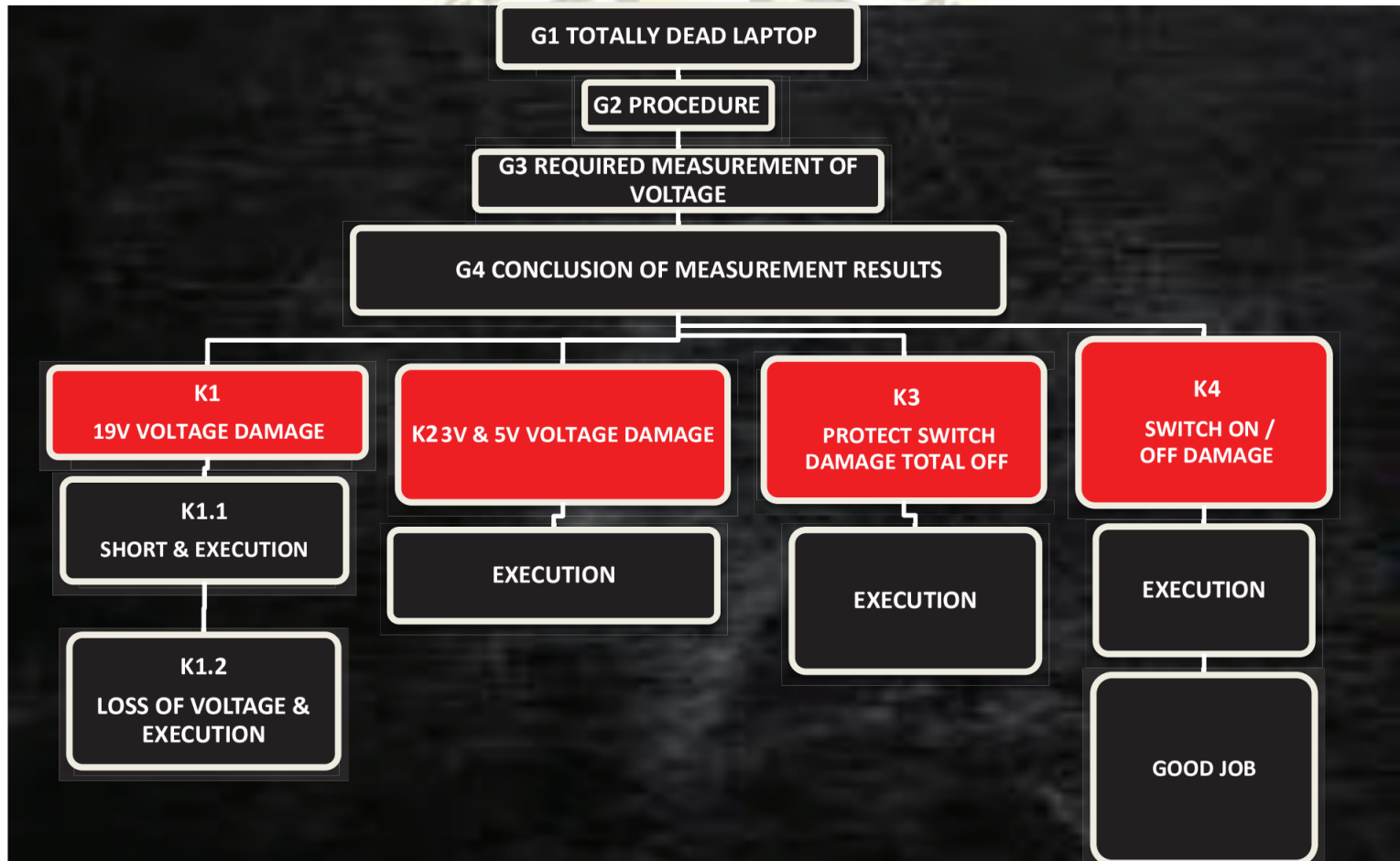
Thank God, the writing of this book was completed on 27th November 2017, and digital revision had done and finished on january 2019. Hopefully it will be useful and become a charity for all of us.

Note: I'm sorry, because of the limitations of my English writing, and I hope this book can be a guide in solving problems with the laptop you're experiencing.

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TOTALLY DEAD LAPTOP SERVICE DIAGRAM

G1 TOTALLY DEAD LAPTOP

Laptops total loss of power is characteristic of damage without any indicator lights at all. if in the field I have found damage such as an electric power indicator immediately off, power flash / flashing etc. While there is still an indicator light when it is not totally dead, there is still an indicator light, the author intentionally separates and assembles the characters - the damage characteristics on the laptop are based on the different characteristics of the execution technique.

NO INDICATOR IS ONLY AFTER
PRESSING SWITCH ON / OFF.



If we have not mastered this technique well, it is certain that at the time of execution on the field we will be confused in the execution process, or even wrong in the execution process. This technique is also expected that those who do not understand electronics or who are just starting out in the field of laptop service repair will be easy to learn and immediately practice it. Ameen.

G2 PROCEDURE

1. Management confirmation (read the management confirmation in the appendix of this book).
2. Check the adapter & battery (replace the adapter & remove the battery).
3. Reset power (press switch on / off for 5 seconds). Note: without adapter & battery.
4. Disassemble the laptop & reset power as in technique **No. 3.**
5. Management confirmation (read management confirmation in the appendix of this book).
6. Checking the motherboard, data cable etc. (there may be rust, dirt, burning cables or burnt / bad physical components).
7. Detect the chip (open the chip detection material in the appendix of this book).
8. Cleaning, cleaning motherboard with thinner (this step is done when the motherboard is dirty) do not test to turn on the motherboard before the runner dries.
9. Mandatory voltage measurement.
10. Management confirmation (open the management book confirmation).
11. Execution.
12. Running (test with an analysis software tool).
13. Confirmation.
14. Finishing & warranty status.

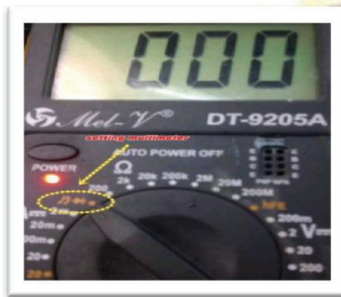
Note :

If stage 1 has resolved the problem, the second stage does not need to be continued, and so on. If stage 1 has been able to solve the problem directly to stage 12. 13 & 14.

BASIC MEASUREMENT

Here are several measurement techniques in the world of analog / digital electronics. However, to narrow the scope & facilitate understanding, especially for my brothers who do not have basic electronics, it will be faster to understand and practice it. So we discuss some core points with a technique that is quite simple & fast.

1. COMPONENT MEASUREMENT



Setting multimeter

Things to consider before the measurement process is the multimeter calibration setting in the mode diode / buzzer. And when measuring components, it is mandatory without voltage or connected with a battery / adapter.

Note:

Buzzer scale mode is used for test mode (component, path, pole & diode value). It is recommended to use a digital multimeter.

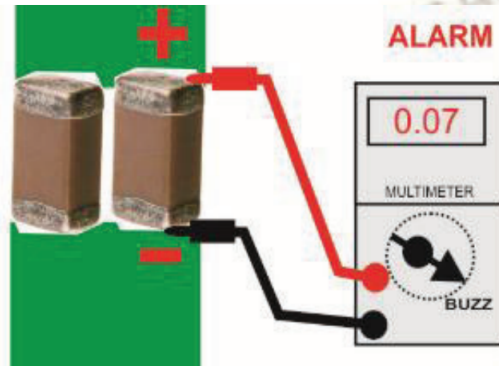


Indirect measurement technique

Indirect measurement technique is a component testing technique where one of the probes is attached to the ground (screw hole), this measurement technique is also called the diode value technique.

For example : Red probe is placed on the component and black probe is placed on the base hole. (as shown in the picture on the side).

For the diode value technique the position of the probe is reversed (red probe on ground).



Direct measurement technique

Direct measurement technique is a technique where both probes are directly attached to the foot of the component with the position of the component still attached to the motherboard.

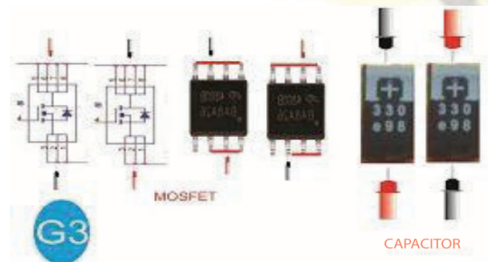
Note:

The probe is alternating with a delay of 3 seconds.

The tip of the probe is at the polar body of the component when making measurements with little emphasis to get accurate results.

Example:

As in the picture on the left, the red probe above & the black probe below, hold the position for 3 seconds and notice the sound reaction / not on the multimeter. After 3 seconds, place the black probe above and the red probe below, and look back multimeter reaction.



REMEMBER THIS WITH CAREFULLY: which should be our benchmark is to find components that if in alternating probes there is a buzzer / sound reaction, we can be sure this component has a damaged. The rest outside of the measurement results, the components are still good (kept remember this)

The measurement mode also applies to components (polar & bipolar capacitors, mosfet N-channel / P-channel and diode).

For most Advanced methods, please refers to material on How to Read Schematic Laptops (component properties) book .

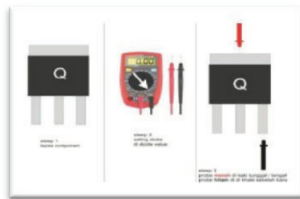


In addition to the buzzer sound, also pay attention to the number values on the multimeter display.

If the measurement of the component is directly on the motherboard / without removing the component, there is a characteristic in this measurement technique because there are several components that if we measuring this it will occur buzzer sound, then what we have to pay attention is the display value of the multimeter (remember this if the display value is **on a** multimeter above 0.10 then the component is not damaged even though the buzzer has been turned back and forth there is a sound reaction, this event occurs because the component is installed on the motherboard and integrated with another circuit).

For the case of a motherboard short circuit Measurement is prioritized on the 19V power line (always power line) area. do not measure components that are not within the scope of the power section, such as near the chipset because all components near the chipset on some brands if we do testing especially the capacitors in the chipset area there will be a short reaction, this is happened because the load / chipset attaches to the motherboard added Path integration in the chipset area is very complex.

The same thing as the processor, if we want to test components near the processor area, it is mandatory to remove the processor (please reset the test results of components that are close to the processor / at the bottom (reverse) socket processor measurement results when our processor is released). Of course the quality and accuracy of the multimeter is very important.



Measuring foot mosfet 3

Red probe on single leg (center) and black probe on right leg (there must be a value on the multimeter display). Then our position behind the black probe in single and black legs on the right leg (should be no value)

If the measurement results are not like information, you can make sure the components are damaged.



Resistor measurement

Special measurement of components (smd resistor / flea resistor). To get accurate measurement results using special media tools (SMD TESTER).

Note:

measurement with the smd tester to measure the value of a component both the ohm (Ω) on the resistor / farad / MF on the capacitor.

In the 19V short case, the measurement on the resistor is not recommended. Resistor measurement is only in the case of advanced voltage loss with schematic, advanced protect switch and advanced odd damage.

Damage to these components from 10 laptops is only 2 in the case of advanced voltage loss with schematic, advanced protect switch and advanced odd damage.



Measurement of fuses & inductors.

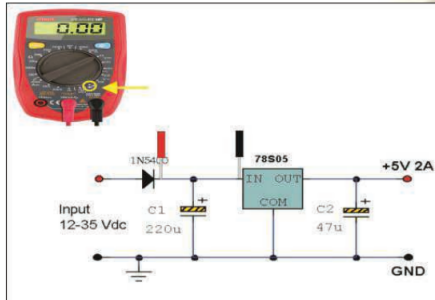
Note:

This measurement technique **is only specific to these 2 (two) components**. Because one of the properties of this component is to deliver a voltage / one of its legs is not connected to ground.

Multimeter scale position on buzzer:

Alternating mandatory sound probes. If it doesn't sound, then it can be sure the component is broken

1. MEASUREMENT OF ROADS & VOLTAGE



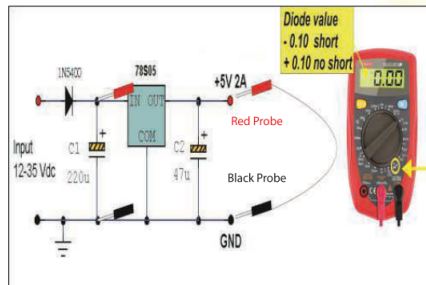
Path / track measurement simulation.

This measurement technique is used for cable / line testing methods on the motherboard to determine the cable / line break / no.

If the path is still OK, the multimeter will react / sound & when the line breaks, the buzzer will not ring.

Note:

1. Pay attention to the position of the probe in the image (the position of the probe may be reversed).
2. There must be no voltage.

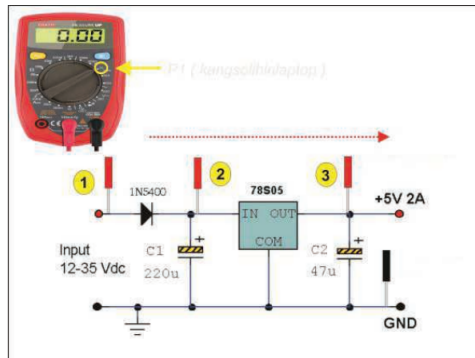


Short circuit measurement.

This method is used to testing short detector circuit checks.

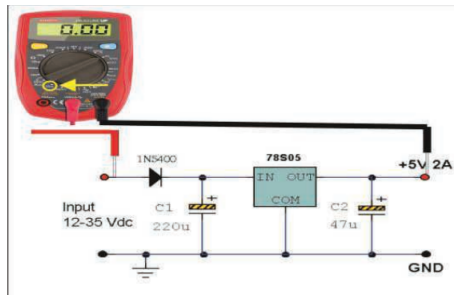
Note:

1. Pay attention to the position of the probe in the image.
2. There must be no voltage.



Voltage measurement simulation

Position the voltage scale on the multimeter setting depending on the voltage we will measure. Voltage measurement techniques pay attention to the position of the probe. The **black** probe is on GND (it's free, it's up to the important ground). While the **red** probe is also up to which point we want to test (input or output). This measurement method is used to ensure the uninterrupted voltage after passing through the components that carry the voltage, pay attention to the picture on the side, if at **No. 1** there is a voltage and at **No. 2** there is no voltage it can be sure the component is broken.



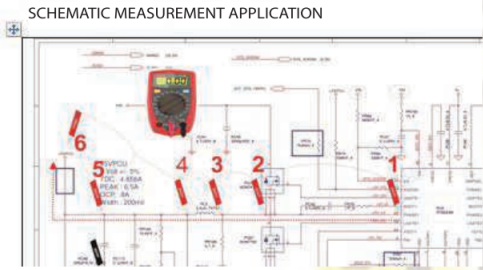
Amphere measurement simulation

Note:

pay attention to the position of the probe in the image. The amphere test method is used to test the amount of amphere output for a circuit for analysis of schematic & circuit testing.

Note:

The amphere measurement method in street laptop service techniques is not used.



SCHEMATIC MEASUREMENT APPLICATION

Get to know the forward and backward measurements.

The advanced testing method is sequencing the voltage from input to output while the backward measurement method is from output to input.

The measurement method is backward faster because if there is a voltage in the output, it can be ensured that the input is already there is a voltage.

This measurement technique is used for cases of voltage loss.

CONCLUSION:

The difference in measurement of components & voltage measurements is on a multimeter scale (the position of the scale should not be forgotten).

Component or voltage measurement method aims to find & analyze a damage, resulting in a precise & accurate execution process.

Remember measurements are not resolving cases but looking for cases / analyzing. A technician must be able to analyze damage both with measurement methods, instincts & methods - other methods (we have to practice a lot to be more proficient. So for beginners in learning science don't give up easily, don't easily draw conclusions before testing & analyzing. Try again, search & search again because that's the only way).

In techniques other than careful calculation, there is also a need for sharp instincts / filing, of course this requires flying hours & a slightly long process with tortuous problems such as being dead / getting worse because of method errors & execution, at this point do not easily break up (at every job there must be a risk & if we don't want to take risks then bury in - in our intentions to be a technician). In each process requires time, struggle & sacrifice. More quieter a technician, more faster & more appropriate the decision will be made. Remember science is light, ask only him, many who fail to become good technicians from the course / read books because of his belief in the course or reading the tutorial book will definitely be able to, but instead result in 0. So "pray" & let's continue the next material.

G3 REQUIRED MEASUREMENT OF VOLTAGE

REQUIRED VOLTAGE IS A VOLTAGE THAT SHOULD BE A BUTTON ON / OFF NOT PRESSED AS A TERM OF A LAPTOP CAN BE NORMAL. (IN SCHEMATIC LAPTOP INDUSTRIAL DIAGRAMS GIVES NAMES WITH STANDBY / ALWAYS ON / VOLTAGE TERMS)

Little need to know there are kinds of voltages in the circuit system of a motherboard and each voltage system works like a trip to the upstairs / risers and many block if we apply it with an example of a city that we are going to then before we get to the city we have to pass several cities and roads. And this mandatory voltage if we apply a car that first enters the main gate of the toll road. in terms of electronic schematic such as VS - S5 - S3 and others that are some of the cities that we will go through, and if in a city there are fires or natural disasters, our journey will be hampered to the destination. In addition to the mandatory voltage requirements an electronic system can work is a clock & signal but the problem of causing a laptop to die is a total of 90% in the mandatory bad voltage system (for schematic & system circuit materials on level 1 - 1 street techniques the author will not explain here in As a result of the author's survey, almost 80% of laptop members / technicians who register to the forum do not have basic electronics & other reasons to avoid prolonged and difficult material to understand, making us dizzy and confused. We just ignored the terms electronic & schematic, but the author who guarantees that if we master level 1 - 1 street techniques, it will be easy to process the service in the field no less than 1 month and can be directly practiced & of course with the blessing of Allah SWT (pray) And those terms keep changing names like street names / the city that we have passed as described above (ALW - VS - S5 etc.), so is mandatory voltage. Mandatory voltage is the initial condition for distributing laptop voltage to normal. If one of these voltages is problematic, it can be ensured that the laptop will die completely and 90% of the causes of total laptop failure is the system failure in one part of the mandatory voltage where we will discuss these systems with slightly different technical terms after street techniques are mastered while walking and working if studying law is mandatory, then it is required to study electronics more deeply - more broadly and more specifically perhaps because it cannot be denied that the technological development of the year is more advanced and progress is very fast.

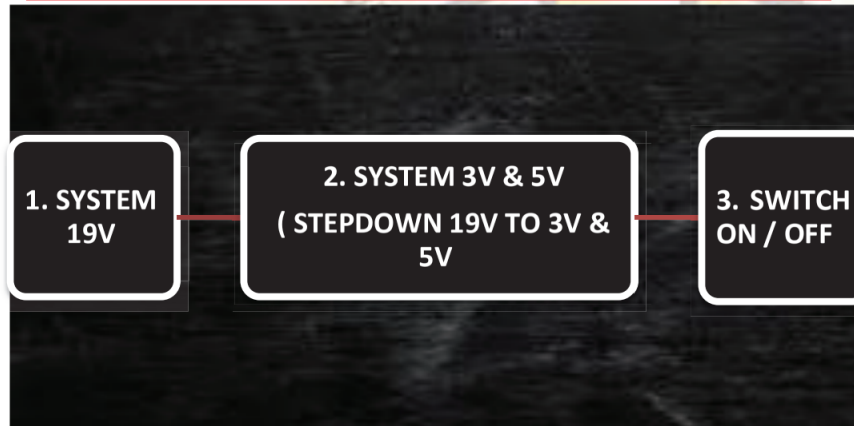
General requirements outside of street engineering to be able to master laptop service are totally dead, such as: learning basic electronics, learning systems, learning symbols, the form of functions of each component and hardware, in addition to learning the absolute requirements in techniques are memorization, of course requires process the old one to master all that. but with the street engineering method, the conditions are only one and foremost, namely mastering management techniques and management services, especially on material

(measurement) as an advanced method of analysis & execution. For Management techniques, please learn and practice by yourself through the 2013-2014 - 2017 video. And at this time we will focus on measuring material.

Measurement is the 9th stage service process at the procedure stage of how the laptop service is totally dead. In this material, it is only necessary to memorize the layout of the measurement points on the motherboard and the characteristics of damage after taking measurements and execution - fast execution of each character of mandatory voltage damage.

The voltage must be divided into 3 parts, 19v, 3v & 5v, & points on switch on / off. (These points can be reset for 9 years in the field of laptop refinement services. So at this level you don't need to take measurements to other areas). If there is doubt in the execution process, please use a media case study / consultation with the author via Whatsapp because on the 90 brand field the damage and handling techniques are the same, case studies are not a way of shooting if taken from several experiences that have carried out execution in the field. Other requirements while walking will also have to know the components and characteristics as well as the identification of good / damaged components as described in the previous material.



19V SYSTEM MEASUREMENT POINT - 3V & 5V SYSTEM & SWITCH ON / OFF

On the graphic image on the side we can conclude that. The flow / path voltage 19v apart from spreading to all circuit blocks and also entered the system parts 3v & 5v. If a water tap is applied, the water enters from 19v to 3v & 5v. where in the 3v & 5v blocks the initial voltage of 19v is changed to two small voltages namely 3v and 5v.

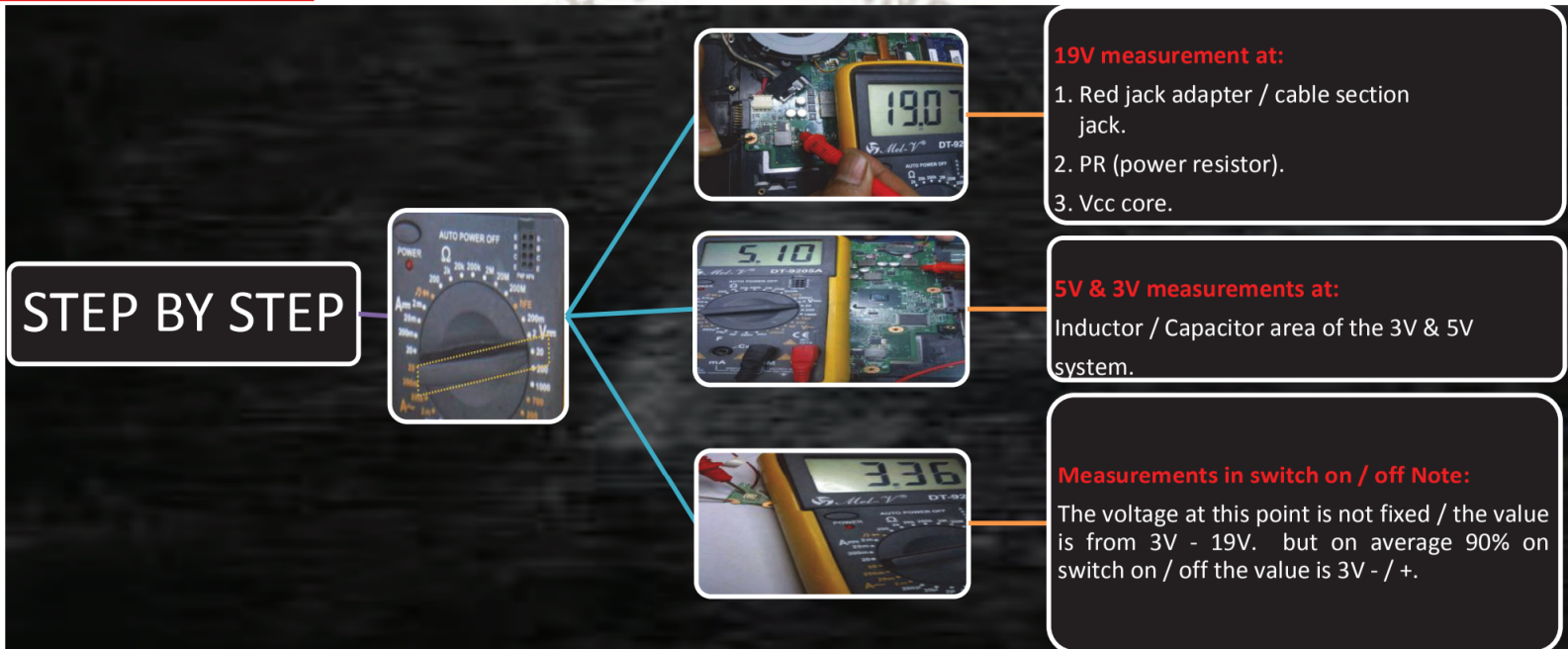
Why is it 3v and 5v?

"Bios requires a 3v standard voltage when using voltage 19, then the bios IC breaks down"

Note: we are required to memorize these three measurement points. Only 3 points are only 3 points. It's easy.?

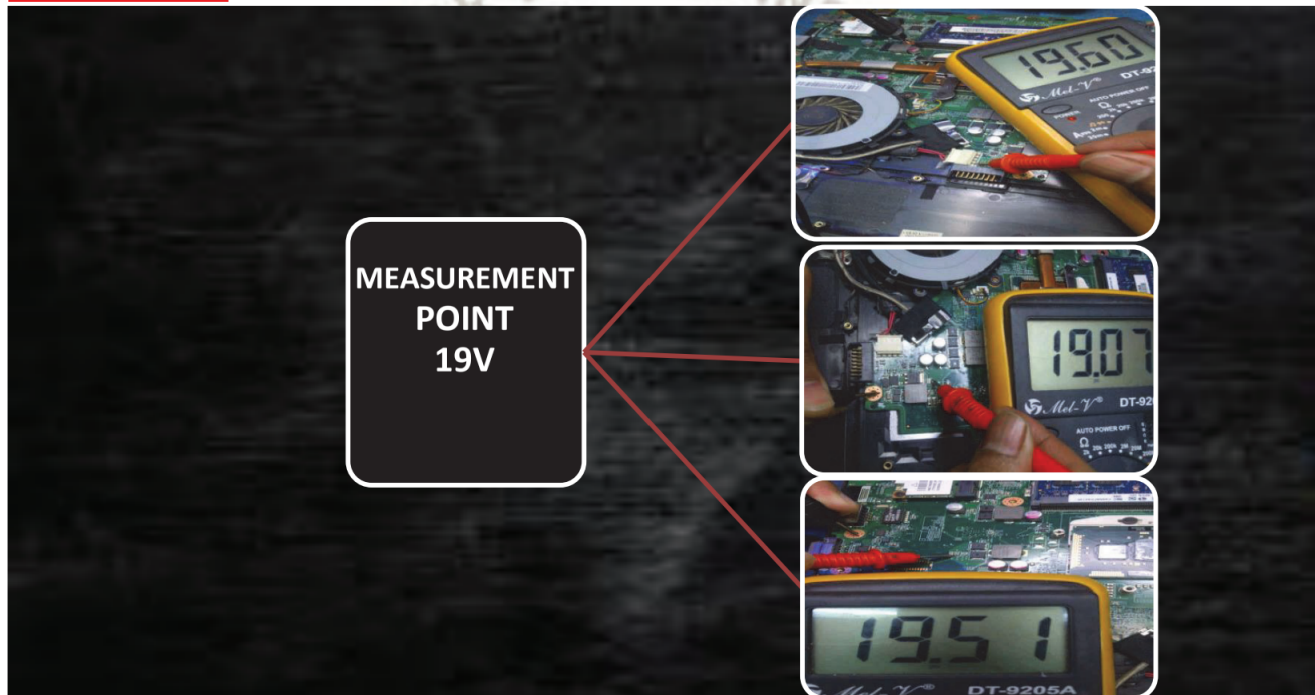
After these 3 points we memorize and master Next memorize the characters and execution techniques for each part because in each part the different execution techniques.

SIMULATION MEASUREMENT

**WARNING :**

1. Avoid short-circuit materials that can conduct electrical current & ESD / static electro-discharge, when measuring the motherboard.
2. The initial step of setting the multimeter on **DC 20** (recommended using a digital multimeter).
3. How to measure the voltage put the black probe negative / where the bolt and the red probe at the measurement point we are going to go.
4. Measurements step starting from 19V ON TO 3V & 5V CONTINUE TO SWITCH ON OFF or by the SWITCH reverse measurement technique **ON OFF - 3V & 5V - 19V.**

19V MEASUREMENT



Note:

1. Measure on the adapter jack on the motherboard / on the red cable if the jack is separate from the motherboard & on the PR.
2. Measure directly into the vcc core in the bipolar vcc core capacitor component (the voltage section area for the processor). Why on the vcc core. If we apply again if the adapter jack is the first tap, then the vcc core is the last tap. So we just check the water on the first and last tap. If there is no water in the last tap, it can be ensured that in the middle there is no water so there is no need to measure it due to overtime and please use it yourself.

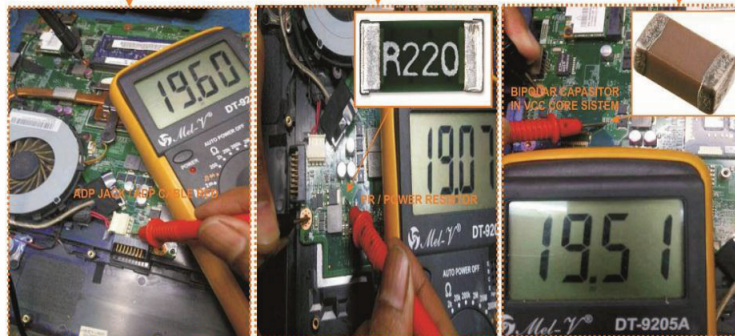
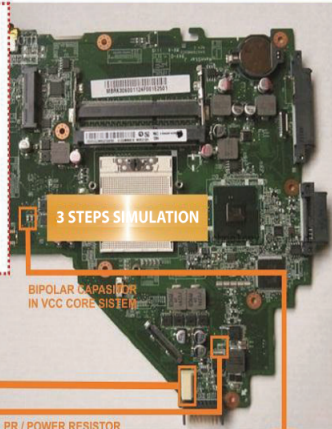
19V SIMULATION VOLTAGE MEASUREMENT



19 v MEASUREMENT

THREE POINTS OF 19V MEASUREMENT TECHNIQUES:

1. ADP JACK / ADP CABLE
2. POWER RESISTOR (VIN 19V)
3. BIPOLAR CAPASITOR IN VCC CORE



Fast mode measuring point 19V

Simply focusing on just 3 measurement points is very simple and very easy.

1. On the power jack.

If the jack directly attaches to the motherboard the red probe measurement point is in the center of the jack.

If the jack uses a cable connection as shown next to the probe, it meets the red cable socket section. Because in the world of electronics red analog cable is the physical symbol of the positive pole while the black cable is negative.

2. On PR near the power jack.

PR (power resistor).

3. Bipolar capacitors near the processor.

Capacitors *line 2.2 / 3.3*.

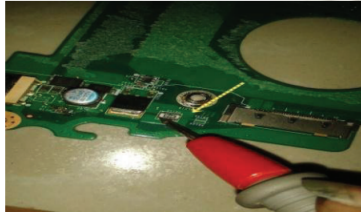
If you are still confused, continue reading first.



To measure voltage, multimeter settings on a DC 20V scale.

Measurement on the positive power jack (red cable if using a cable / middle leg socket jack that directly attaches to the motherboard).

Note: red probe on the toe of the red cable socket & black probe at the screw hole location.



Measurement on PR.

Generally there are 2 PR on a motherboard that are close to the power jack and the PR near the battery socket. In this case, PR is near the power jack (so that it doesn't have a wrong measurement, see the path on the motherboard / open the schematic diagram).

The 19V voltage from the power jack after entering the voltage can be distributed to all parts of the motherboard. In general this PR if we look at the schematic diagram of some brands termed the term VIN (power input). Because the laptop motherboard itself works as a voltage of the other circuits.

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Measuring in the core VCC

Measurements at this point are not recommended because as explained earlier in the measurement at the **PR** point where if 19V has passed the **PR**, it can be confirmed that **19V** has been distributed / spread to other circuits.

Measuring at this point is just to make sure that **19V** has spread. Because the vcc core / circuit voltage for the processor is the last step in the system voltage on the motherboard including **19V**.

Note: Vcc cores if we simplify are circuits that produce voltage for processing power supply. Because each digital hardware on the motherboard in this case such as a chipset has a voltage control circuit for each power supply. And on those circuits, both circuit always and the power switch circuit, it requires **19V** as input for circuit work conditions.

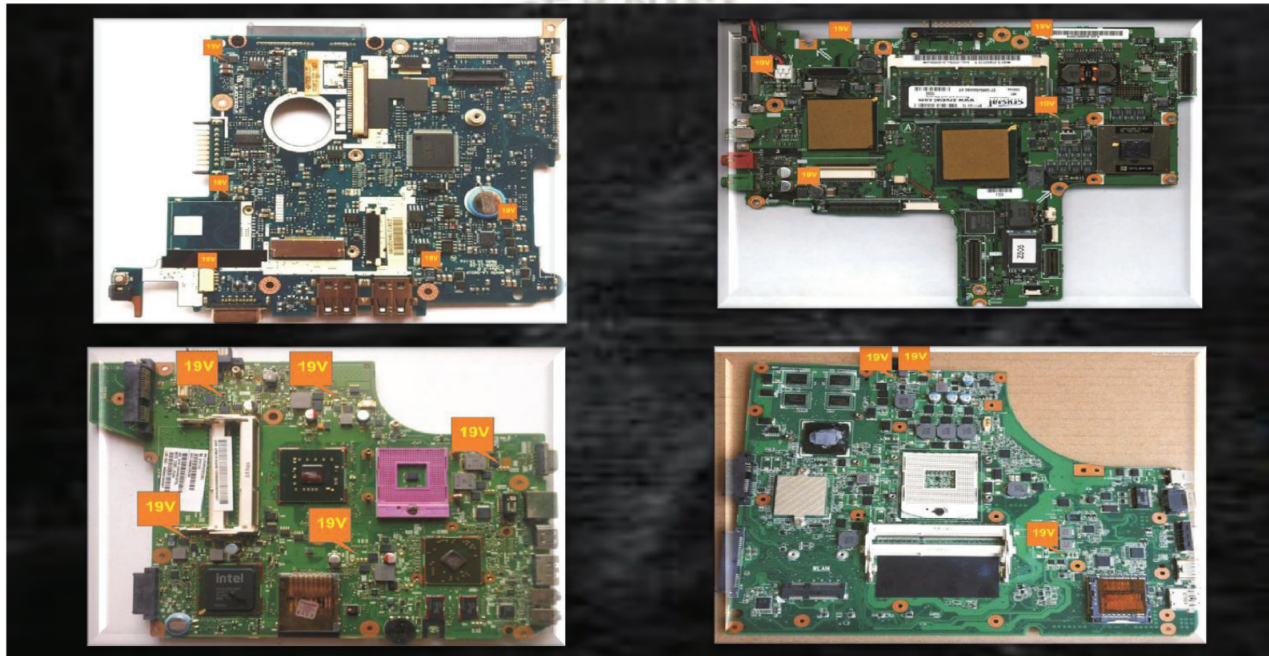
Example :

V ram / DDR: is a voltage circuit for RAM

GPU core: is the circuit voltage for VGA chipset (Discrete, SB & NB)

Note : Determine beforehand the techniques & methods of measurement, while additional material inserted in each table limits first just to know first / as additional knowledge that needs advanced understanding, Remember not to draw conclusions or practice before reading until finishing.

MOTHERBOARD SIMULATION POINT MEASURE 19V

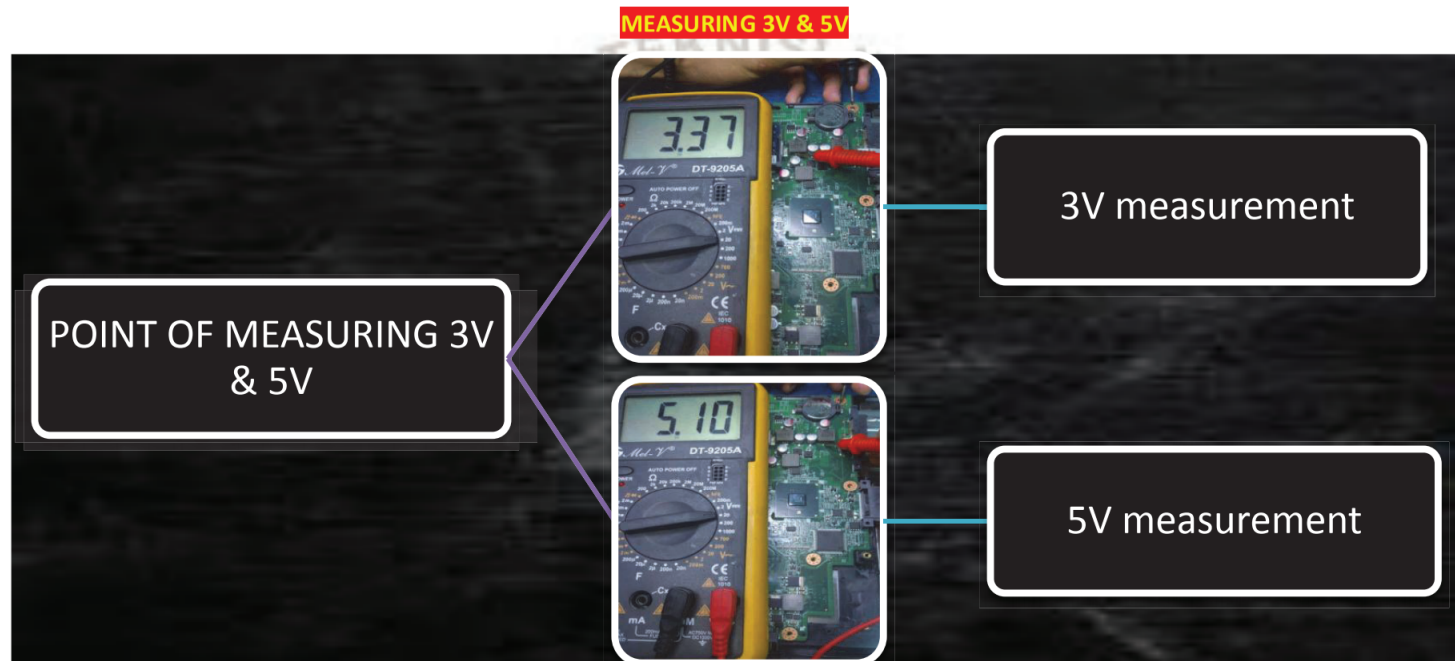


The 19V measurement point is more detective where 19V is input in all systems.

Measurements may use the forward / backward measurement method. But the fastest method is the reverse measurement method because if the VCC core is already 19V, then the PR & JACK POWER automatically has 19V so we can skip these 2 points & continue the measurement to the 3V & 5V parts. Advanced measurement (JACK POWER - PR - VCC CORE / other parts as shown above). Reverse measurement (VCC CORE - PR - JACK POWER).

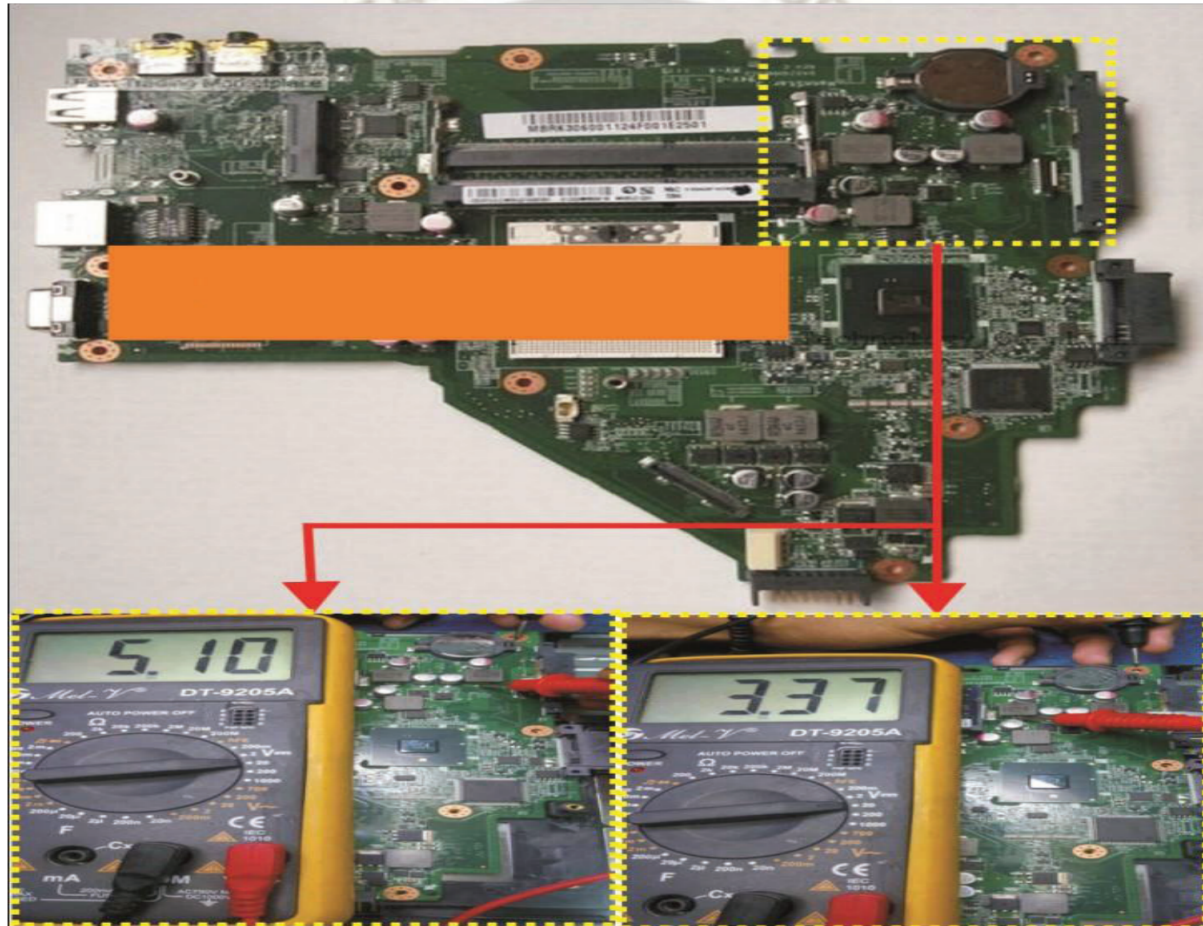
Note:

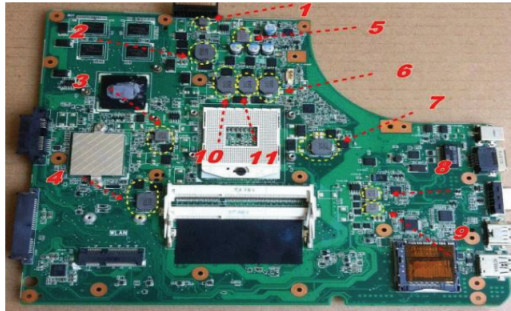
Remember the measurement is only at 3 points (while the simulation image above is 19V points if we want to do a 19V search reset further because curious about 19V where it spreads ...).

**Note:**

- Measurement of inductor components on 3V & 5V systems.
- Why in the inductor? because it's safe the scope is wider also prevents fatal errors.
- Then how do you know the 3V / 5V point? just random the inductor on the motherboard at most 10 seeds & better memorize the layout.

MOTHERBOARD SIMULATION 3V & 5V MEASUREMENT TECHNIQUES



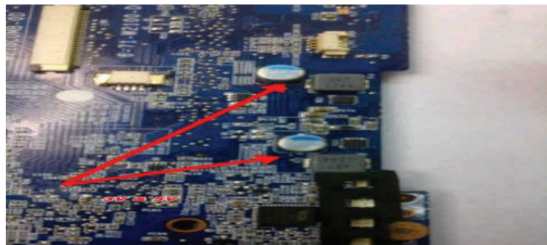


Maybe until here you can guess the **3V & 5V circuits** are at **No. 8 & 9**.

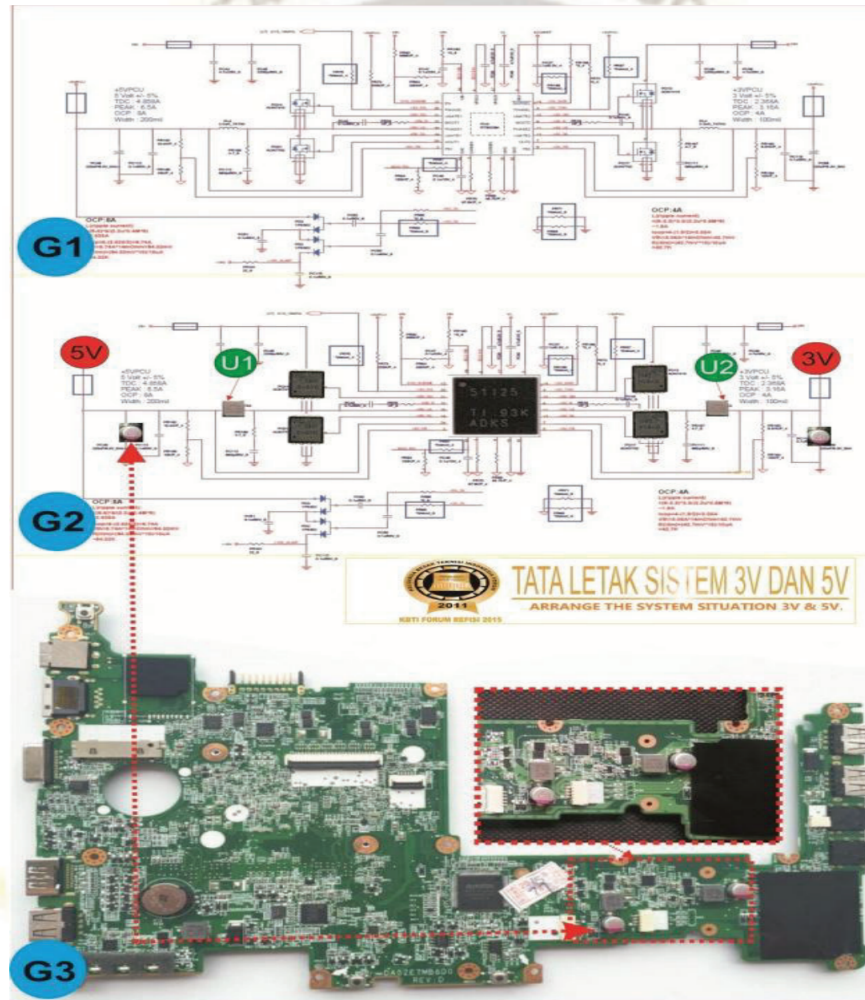


The image next is a motherboard with the characteristics of a single mosfet. In order not to be wrong with the motherboard characteristics like the picture beside, then to find a 3V & 5V system to be accurate by reading the motherboard schematic.

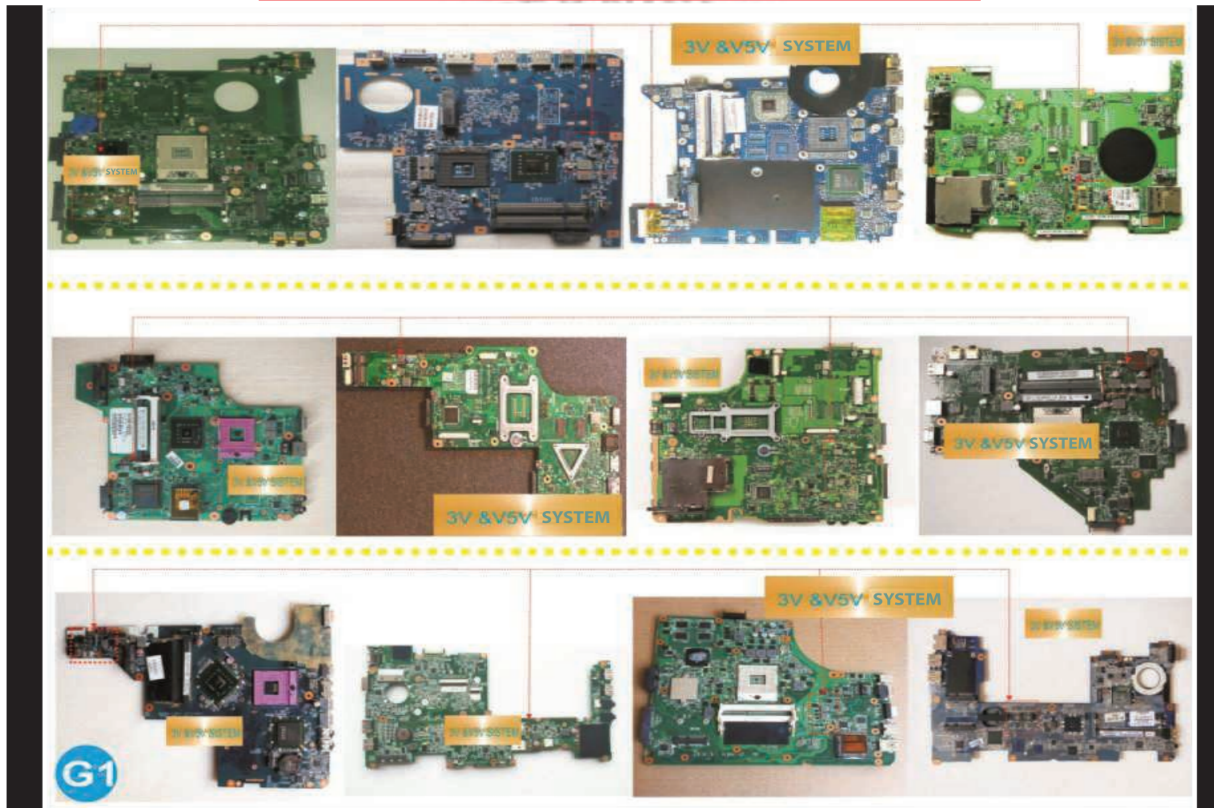
Staying calm is the only way to be calm, because the **3V & 5V system** with characteristics like in the picture in the field is not too much / not common.



Schematic simulation. Layout & PCB motherboard system 3V & 5V

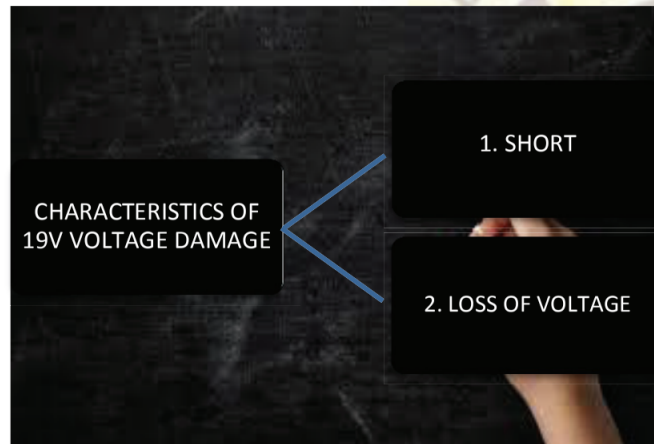


MOTHERBOARD SIMULATION 3V & 5V MEASUREMENT TECHNIQUES



Note:

Note and memorize the characteristics of the 3V & 5V location, actually on the motherboard system the voltage is divided for blocks and the characteristics of the 3V & 5V blocks are 2 inductors, 2 capacitors, 4 mosfet and 1 driver IC that is often we call power 3V & 5V IC. After the mandatory voltage measurement layout material has been mastered, the material rises to the damage characteristic from the conclusion of the result. The voltage measurement is mandatory.

K1 VOLTAGE DAMAGE 19V

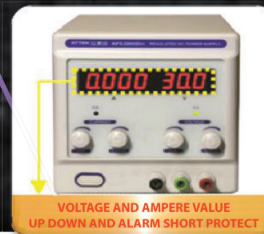
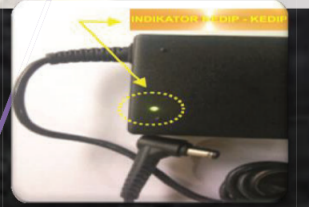
The characteristics of voltage damage 19V are the conclusions from the results of mandatory voltage measurements. And the characteristics of damage 19V are divided into two, which are:

1. Upside down / measurement results on a multimeter the value is not fixed (SHORT).
2. Voltage loss 19V.

K1.1 SHORT

CHARACTERISTICS / SHORT CHARACTERISTICS

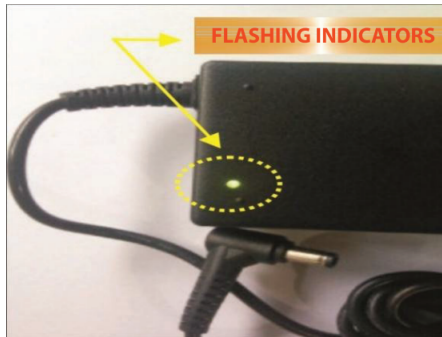
CHARACTERISTICS



1. The laptop adapter indicator lights are blinking / off when connected to the laptop.

2. If we make measurements using a multimeter make sure motherboard position removed from the casing. At 19V the measurement results from the multimeter are unstable or up and down (technicians often say drop / short).

3. If the voltage source uses a universal power supply then the display power supply values the voltage is not stable / up and down.



1. ADAPTOR LAPTOP

If you use an adapter that has a parent as shown in the picture, there will be a reaction on the adapter indicator light which will blink or even die immediately when the adapter is connected to the laptop / plug into the laptop power jack.

A laptop adapter that has an indicator light is a technician's reference in determining motherboard damage in this case the SHORT case. This is also an alternative for technicians who do not have a PSU / Multimeter.



2. PSU (POWER SUPPLY)

If using a PSU the direct reaction occurs at the ampere / current value it will rise and the voltage will drop on the PSU display from the values we have previously set (19V).

The reaction will also appear on the ampere indicator light (c.c) which lights red.

On the PSU that has an alarm short feature that will sound & psu which does not have a short alarm filter then a relay reaction on the psu engine will sound a "pretek" sound.

Note: if the laptop has not been unloaded & want to do a test with the **PSU condition** (loose laptop battery)



3. MULTIMETER

If we do measurements with a digital multimeter, the measurement results are not stable / up and down (drop).

And if the measurement uses an analog multimeter then the reaction occurs on an analog multimeter needle that moves up and down.

Note: it is recommended to use a digital multimeter. For those who do not understand the measurement technique, open the material (measurement).

CONCLUSION:

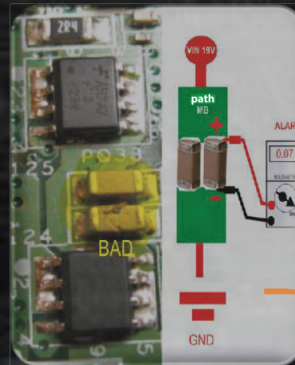
Of the three characteristics of the short case testing method above we may choose an alternative device between one of them or use all techniques for accurate results, but the testing method using the PSU tool media is highly recommended because it is simpler & faster to determine cases of laptop motherboard damage .

The cause of motherboard short is because there is damage to one component in the scope of the motherboard itself. Motherboard line leakage can trigger a short circuit, but in case of leakage of lines on motherboard circuits it rarely happens except on the case of protect switch on the VS line where the trigger is a short circuit of traffic on the motherboard.

Different characteristics of damage will also be different methods of execution, this is the importance of knowing the characteristics / characteristics of damage. In this material we focus first on the characteristics / characteristics of short motherboard cases. If you already understand this material then in practice please continue to the next material.

CAUSED BY SHORT

CAUSED BY SHORT



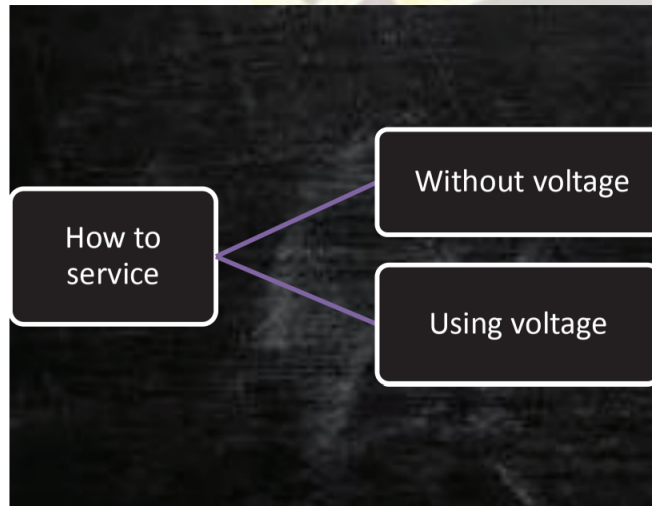
1. component & pathway on fire.

2. Corrosion / rust.

3. The component is damaged which results in a meeting between the negative & positive poles. And events like this are often referred to as total short & component which often results in a total of 90% short of bipolar and mosfet capacitors in each switching area in the 19V jack & charging area, 3V & 5V systems & the third on the vcc core / processor area & for other regions 20% Possible so focus on these 3 points.

Note

1. Don't pull out the components before mastering engineering management.
2. Measurement of components (not using an adapter).
3. Continue reading first.

EXECUTION OF THE SHORT CASE

There are 2 ways to execute 19V damage characteristics:

1. No voltage

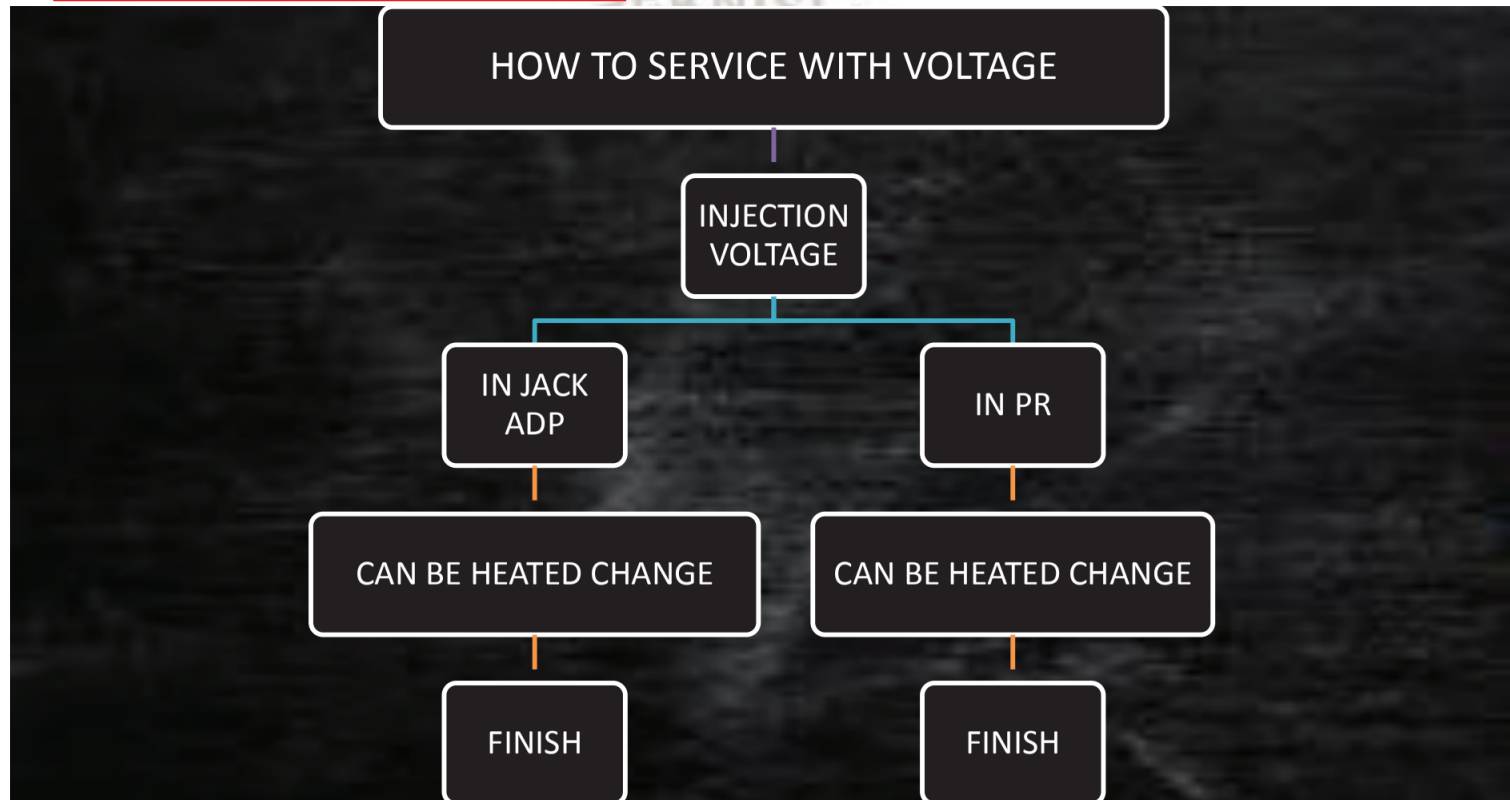
Namely by searching for damaged components using a digital multimeter & cutting the connecting block paths and then removing the suspected components, etc.

2. Using voltage

That is by using the manufacturer's power supply or assembly by adding an ampere value to react to the problematic component (heat / burning reaction) This includes a fast but a rough method because it is a little risky. However, as long as the process follows the flow in this book, the guarantee of the process is 90% safe.

Note : open injection material

HOW TO SERVICE WITH VOLTAGE FAST METHODS

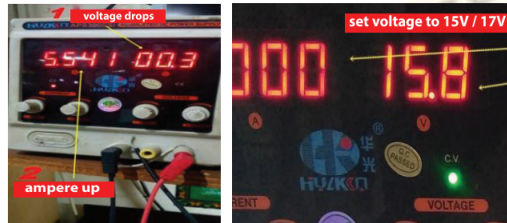


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The execution method uses the PSU 1.1 media tool



If before the laptop is unloaded, a short indication has been found, with features such as the picture on the side. Then immediately we may remove / pull out the PSU plug from the laptop.

Then immediately dismantle the laptop. For further testing.

After that the voltage setting on the motherboard below 19V is either using 15V / 17V. This aims to avoid burning components on the motherboard that will react / have problems.

In the process later when we do the testing with the PSU and make detection of chip / touch components if there is no reaction on the components on the motherboard both smoky / hot. So while the process goes up gradually the coarse settings on the ampere PSU.



After the laptop is unloaded, do not directly connect the PSU jack to the motherboard, and other devices attached to the motherboard, such as headphones / cooling processors and processor fans, CMOS batteries, RAM, Wi-Fi. Just remember the motherboard (motherboard only).

After all released, leave the power & switch on / off jack alone to do the test, if it is ready, reconnect the PSU jack / plug to the motherboard (in this process we must pay close attention to the motherboard reaction, especially the reaction of smoky components, if smoky components react immediately turn off the PSU / remove the PSU jack from the motherboard & if there is no smoke reaction on the component, immediately detect chip).

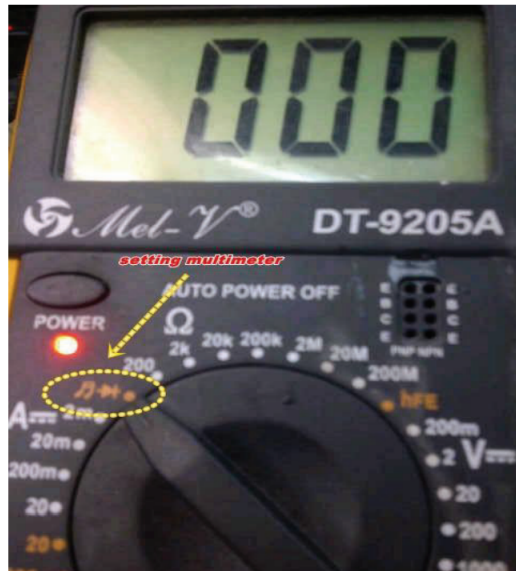
What is detection chip ...? (touching hands on the motherboard power area) & looking for components that react to the motherboard, the reaction of damaged components is characterized by the characteristics of the stinging / even direct smoky component.

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CONCLUSION OF CHIP DETECTION RESULTS:

1. If you find only one component that reacts hot / smoky, immediately remove the PSU jack from the motherboard & immediately test the component either directly on the motherboard or by removing the component from the motherboard to get accurate measurement results.
2. If you find several components that are hot more than one component, then the execution for this second case is the same as the execution of the first case before that, immediately release the PSU jack from the motherboard and do testing / measurement on some of the hot components, these components often occur when we measure components on the motherboard and find results after measuring all the components will be short. Then the step we have to do is to remove one by one component that indicated short was either hot or not hot, for retesting after the component was released. The conclusion for point 2 is "remember component 1 and..."
3. ***Each other are interconnected, so only one component is damaged then the other components that are connected to the component will be short-indexed even though it isn't actually short.***



0.30



0.04

What should be our benchmark is the value of the display on a digital multimeter. Either measurement directly on the motherboard or when we take it off.

1. Values above **0.10** for example **0.30** components are not identified as short even though the alarm buzzer on the multimeter sounds. So the component does not need to be retested. Remember to focus on the component that if back and forth and the value on the display multimeter is below **0.10**.
3. Values below **0.10** are short-identified components, immediately remove components on the motherboard to retest components outside the motherboard so that they can be damaged / only identified short because they are connected with other components that are short on the motherboard.

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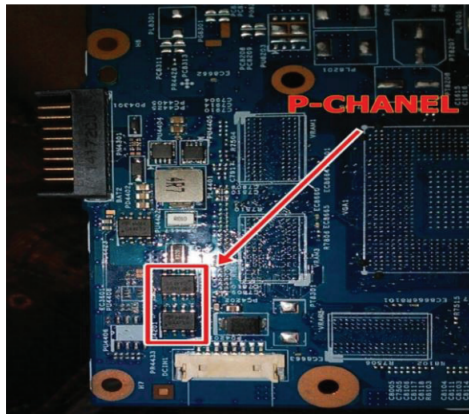
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Operation Method Using PSU 1.2



There are 2 events when executing with PSU:

1. A reaction occurs immediately in the PSU (ampere rises and the voltage drops as explained in the PSU method 1.1).
2. There is no reaction in the PSU, the standby and ampere voltage does not react at all (ampere value 0A - 0.5A). This event was caused by a protection circuit on the motherboard. And we have simplified it in the case of a 19V voltage loss where the voltage is only found in the power jack section and in some nearby components, besides outside the area the 19V voltage does not exist / does not spread. (if we find a case like this, open the material to lose voltage).
Remember ... different damage characteristics, so the execution step by step technique is different.

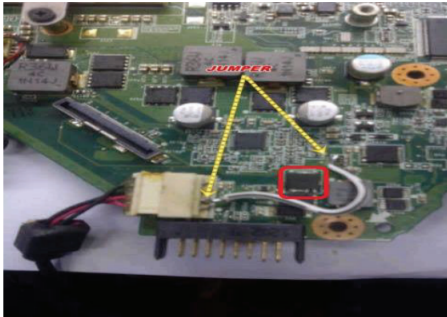


The reaction occurs in the component area of 19V (in this case that often occurs in the field, the component is a mosfet type P-channel where the mosfet is only in the area near the power & battery socket jack, and the mosfet is meant here mosfet is near the power jack like the example in the picture marked with a red box).

a case that often occurs when the PSU plugs into the Mosfet motherboard is hot / even smoky. In conclusion, it could be that the mosfet is indeed broken or there are even other components on the motherboard that are wet.

How to:

Measure / immediately replace the mosfet and if you have replaced the mosfet it is still hot / smoky, so the source of the problem can be confirmed because there are other components outside the 19V power jack area. So the next step we jump directly use cable to PR (power resistor).

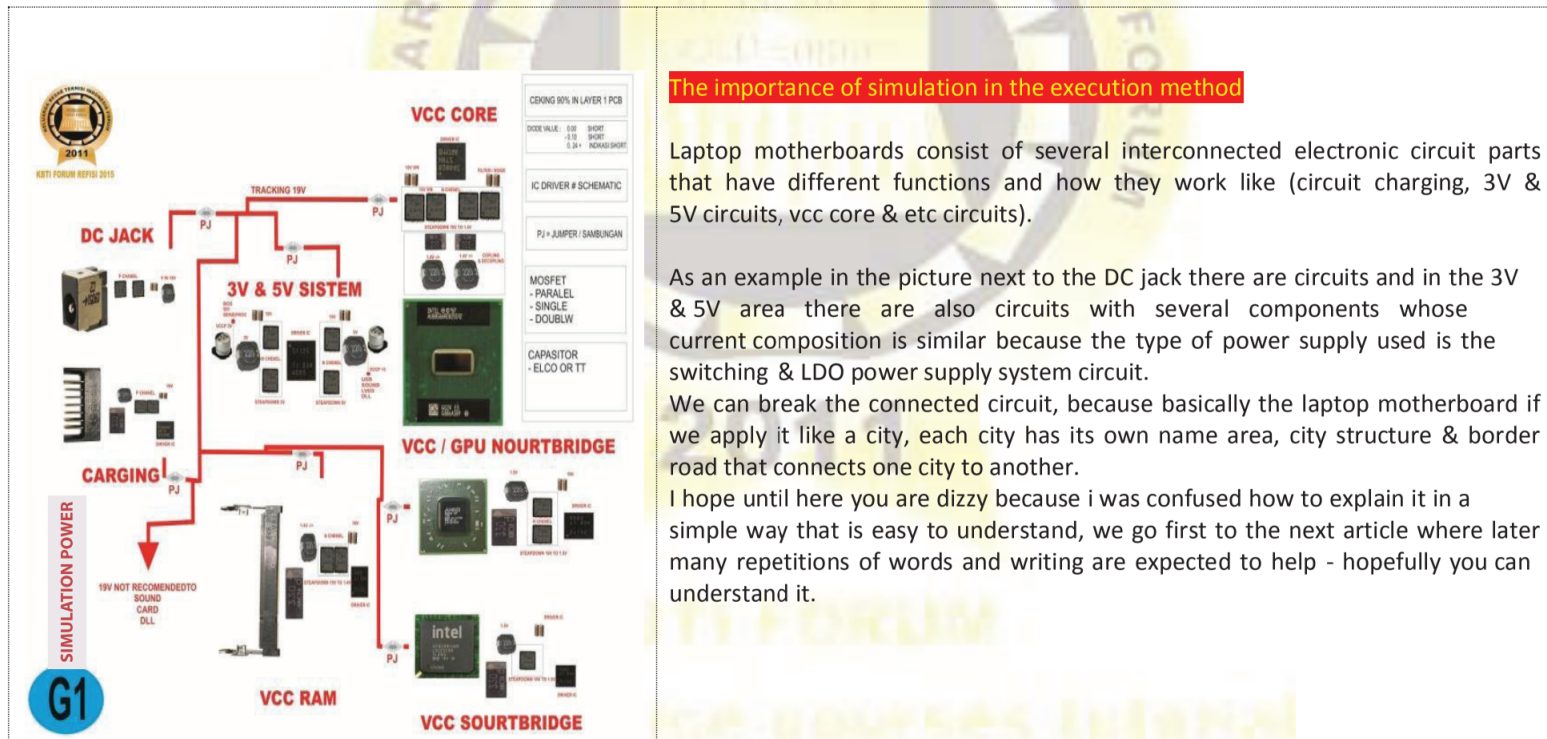


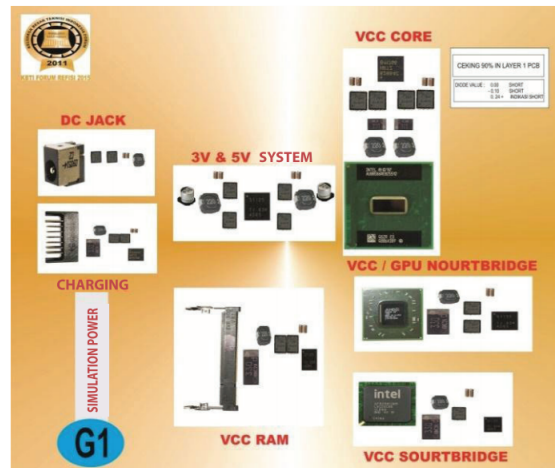
REACT WHEN JUMPER TO PR

1. A reaction occurs in other components outside the power jack area. (So immediately touch the hot looking component). Connect to the circuit area **JACK ADAPTER, CHARGING, 3V & 5V. VCC CORE** especially on **mosfet & capacitor**.
2. If you have found a hot component, test the component directly on the motherboard / remove the component.
3. If a heat reaction occurs in several components, then the solution is we can remove the hot component and immediately do component testing as described earlier.

Method 2 (operating manual technique execution cheking step by step motherboard)

This method is a short classic search method, but until now there are still many technicians who use this method in executing short motherboard cases (because the security of this method is quite good even though it requires a long process and because to master this technique the speed of execution process requires flight hours long enough). Although indeed for beginners this method includes a complicated method because the measurement almost reaches all parts of the motherboard with several stages of the execution process (a combination of measurements with voltage and measurement without voltage).



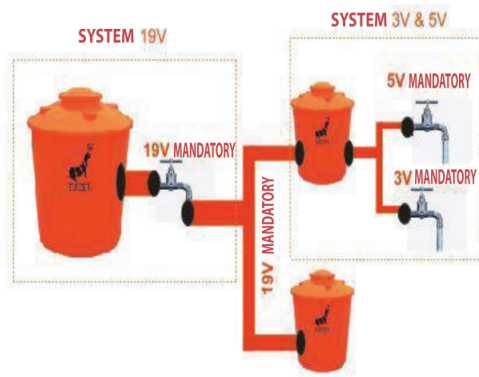


The circuit power section of the motherboard generally uses a switching (SMPS) & (LDO) power supply system, as in simulating the image next to each main hardware on a motherboard has its own power supply - for example DC JACK - BATTERY / CHARGING - 3V & 5V - PROCESSOR / VCC CORE & others. Which if we have simulate a motherboard and cut it consists of several circuits.

In accordance with our discussion on the material this time about the 19V / bypass line then 19V after entering the power jack will spread to the circuits that need it because I need to explain again 19V itself into the working voltage / power source for the other circuits for work.

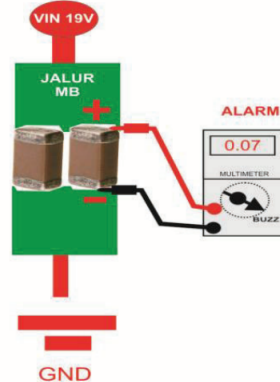
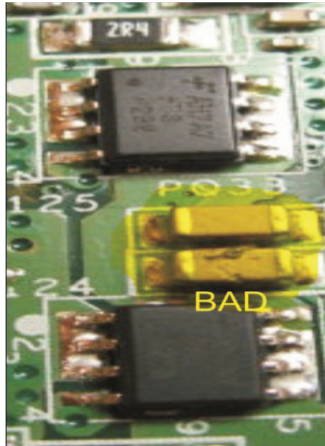
The importance of simulation in engineering is to prepare our brains to be able to apply it because in electrical engineering, for example a voltage is something that is invisible because the voltage cannot be seen except by testing it with a multimeter.

If we apply a voltage of 19V is the source of water from the main Torn ie the adapter then flows to the torn / other tubs such as 3V & 5V, & 3V & 5V is 19V water which is later reduced to smaller which is set through the faucet.



In electro technique a short case occurs due to a short circuit so that no discharge flow from positive to negative occurs. In this case there is a damaged component source causing clogged 19V water flow.

For example, when we wash the car with a hose then the hose that drains the water we cover with the hand, there will be a strong pressure that requires more power to hold it. If the water pressure is very strong then our hands will be released and if our energy is greater then the water pressure will turn to the water source. this discussion might be very spicy for those of us who have basic electronic circuits but need long simulations for us that don't have basic electronics **and I hope to get here even though I hope you start to understand.**



Remember. Short is caused because there is a short circuit that causes no discharge from + to - .

There are electronic components according to the principle and how it works requires positive & negative poles. We try to examine in more detail in this case, many of which play an active role are components of capacitors & mosfets and two components which are 90% the cause of short, if the component breaks bring together the positive and negative poles so that there is a short circuit on the motherboard / short.

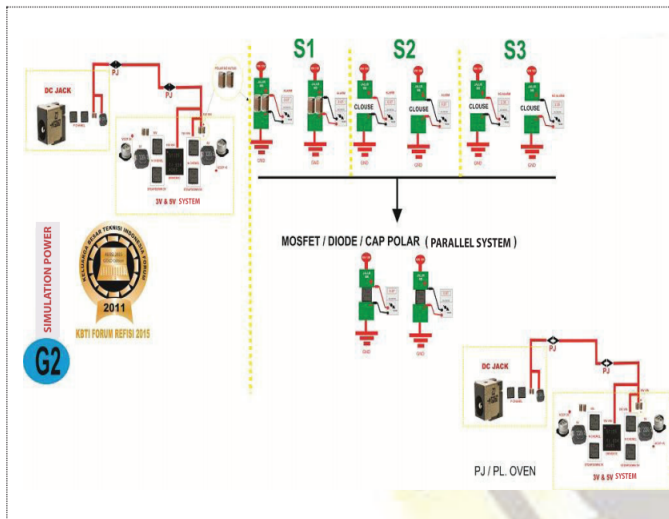
Example: like there is an electrical surge on our electronic equipment at home then there will be nap / shorting on our electricity meter (power failure). turned on again it will be shorting again and so continues before it is known the location / removing one by one electronic devices that are suspected to be damaged such as (fan, tv, refrigerator etc.).

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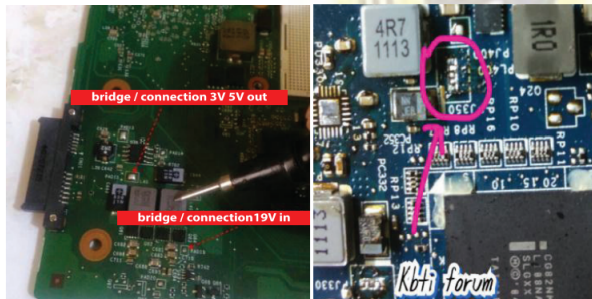
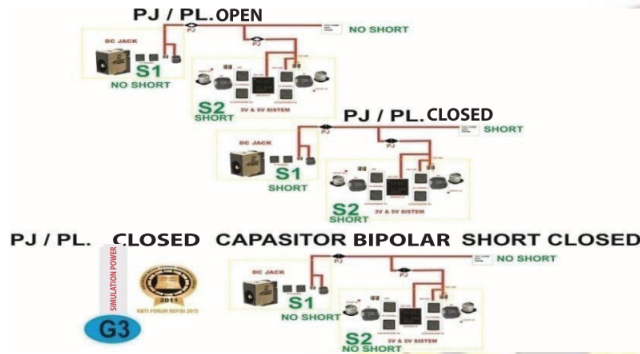
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On the picture side, it is a simulation of short components and measuring techniques. Then how do you execute it because there are too many capacitors and mosfets on the motherboard? We can check directly one by one, but this technique takes a long time and to narrow it focus on circuits that are 19V due to the problem we are discussing here about 19V which is short.

It is important to cut off the lines on each circuit to narrow component checks. Because it is not possible one part of the motherboard that indicated short we let go of all and we do checking one by one. For more details, open the component measurement material again.



Unfortunately, often found a few short components because if only one capacitor seed is short, it will have an impact on the other capacitor components which if we measure short too, although different circuits, for example in the charger circuit, find short components and in the 3V & 5V area too found a short component

Why does this happen?, because each circuit on the motherboard is connected one to another so to narrow our search off the line connecting each circuit, in this case look for the connection code (PJ / TJ) & if the PJ / TJ code is not found then the alternative is by removing the inductor, because the inductor itself in the execution technique we often apply like a bridge.

Always remember of broken/short components will cause the voltage to be damaged / voltage drop / short. Check the area and looking for short components enough for components and circuits that are aligned with 19V (circuit charging, 3V & 5V & vcc cores). Then in other areas can you check it too? It can be like in the CORE VCC RAM & GPU area, but cases in the field have a lot of component damage in the area of 3 digital power points (circuit charging, 3V & 5V & vcc core).

Check simulation Short manual search method

Below are check points looking for broken components. Remember to focus first on the mosfet & capacitor component which is given a yellow mark because the component has two poles which are flowed by voltage 19V.



CONCLUSION:

If one component is damaged then the other one will be indicated to be damaged even if it is not damaged. This is caused by circuit block systems that are connected to each other. there are several techniques for overcoming short total.

- 1. Unplug the components one by one until if we remove the component, the indication of short shortcuts is lost.*
- 2. Removing jumper dots.*
- 3. Injections.*
- 4. In the material, Unplug the components one by one until we remove the component indications of these missing short characteristics from the results of many surveys that fail to learn automatically.*
- 5. Use one of the first techniques to choose which one we think is the easiest of the two methods of executing short cases (method with PSU tool / with manual search method). The author uses the execution method with PSU for short cases.*



K1.2 CASE OF VOLTAGE LOSS

CHARACTERISTICS

The intended voltage loss is where the measurement results are only in the adapter jack while in the PR (Power Resistor) there is no voltage (or voltage does not pass).

CHARACTERISTICS

1. VOLTAGE ONLY IS ON THE ADAPTER JACK

2. NO LIGHTING ADAPTER LIGHTS

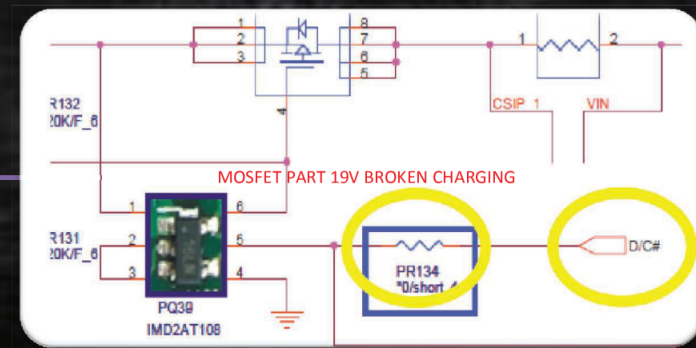
3. IF USING A NORMAL VOLT VALUE PSU BUT AMPHRE 0

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CAUSE AND EFFECT

1. The component is short, the difference in voltage loss is not causing the characteristics of voltage damage to rise and fall (open up and down material). This occurs because the damage to the mosfet antenna in the central circuit is not connected to the negative path. so if the mosfet is broken like breaking the water tap.
2. There is no command voltage from the foot of the mosfet gate P channel.
3. Short on track after homework.

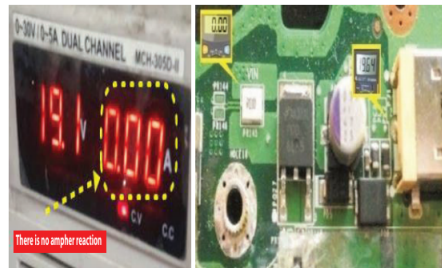
CAUSE AND EFFECT



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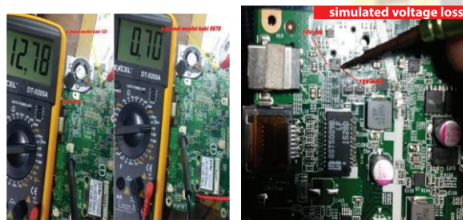
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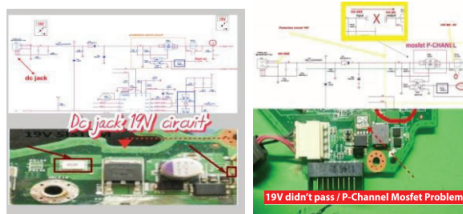


When the PSU plug does not react, the amper value is **0.000** and when we make a measurement, the voltage is only on the power jack, it does not reach PR 19V / does not spread.

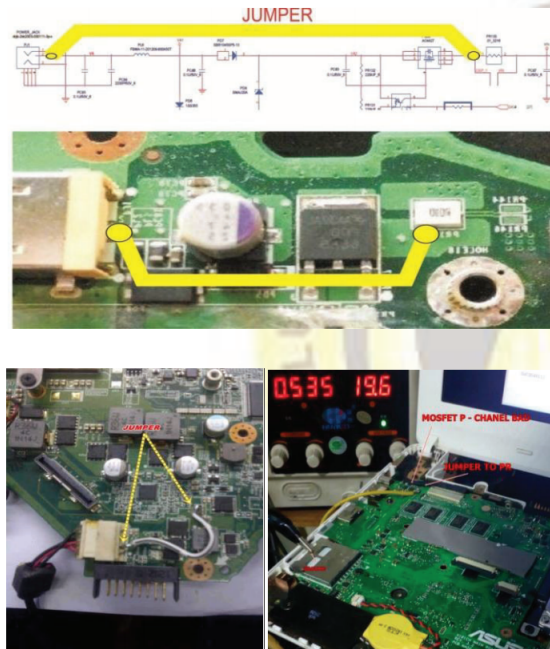
In terms of schematic diagrams in general the 19V PR is written with the term VIN (power input). Because after 19V goes into PR, it can be sure that 19V spreads to all system motherboards. So if we narrow down the measurement technique, even measuring 19V at two points is enough without having to look for 19V to another part. Except different characteristics damage.



If we do a voltage measurement the results will be as shown in the picture on the side.



The cause of voltage loss is the system protection circuit (open the material to read the schematic in section 19V).



The solution to the case of losing the first step voltage is to immediately do a jumper from the jack to the PR. There are **2 events** after carrying out this jumper execution process, namely:

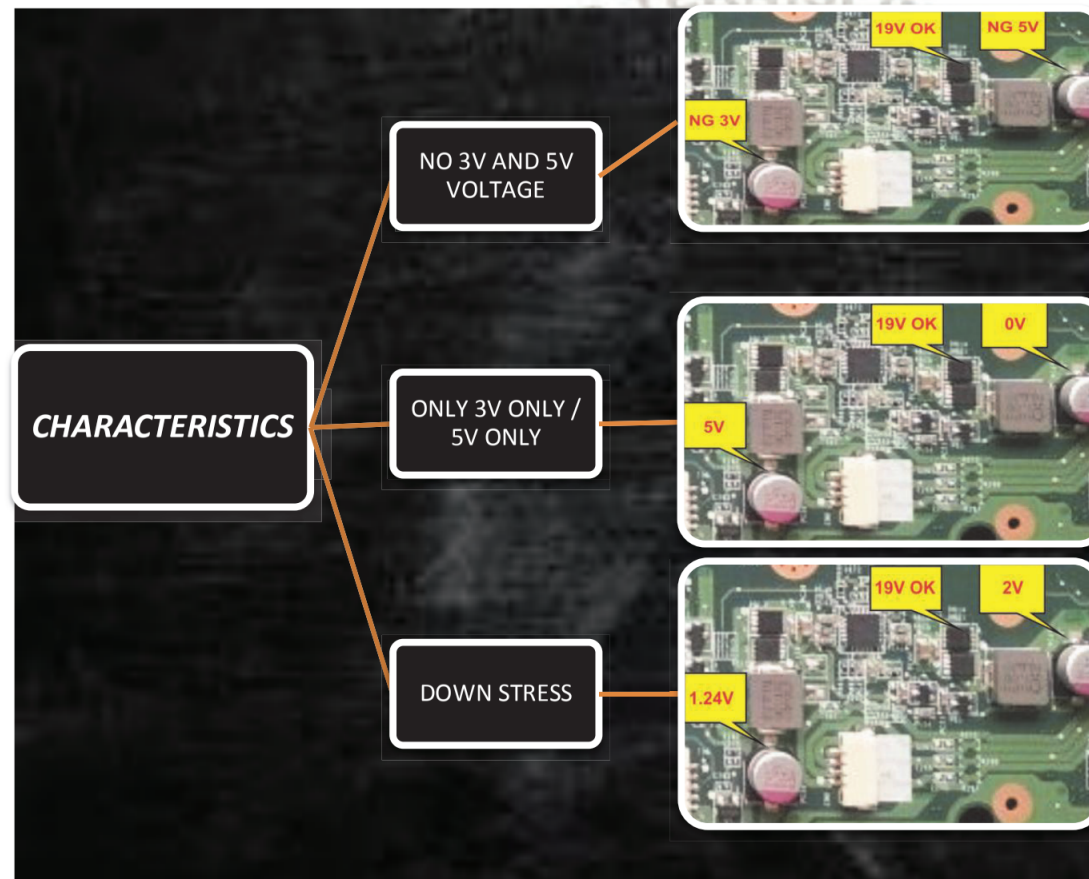
1. The 19V voltage spreads. In the sense that the 19V case is complete. And we just need to focus on checking the component parts before going through the PR, see the picture next to the components before passing PR only a few seeds. And the case that often occurs in the field of the problematic component is the type of P-channel mosfet (not channeling) the solution to replace the mosfet.

2. A short reaction occurs. The execution returns to short cases. Why is it short after jumpering from the power jack to PR? Because there is a protection circuit where the circuit system works like an automatic fuse that cuts the voltage so that it does not get to the PR because there is a short problem in the circuit after the PR is already on 3V & 5V / other circuits. Because the 19V voltage itself functions as the input voltage for the other circuit on the motherboard.

Note:

There **are two types** of PR, namely PR 19V JACK and PR BATTERY. Remember the jumpers to PR 19V not on battery PR. To distinguish it see component layout. Look at the track. Or see schematic diagram. If we don't understand the schematic diagram, open the schematic diagram material.

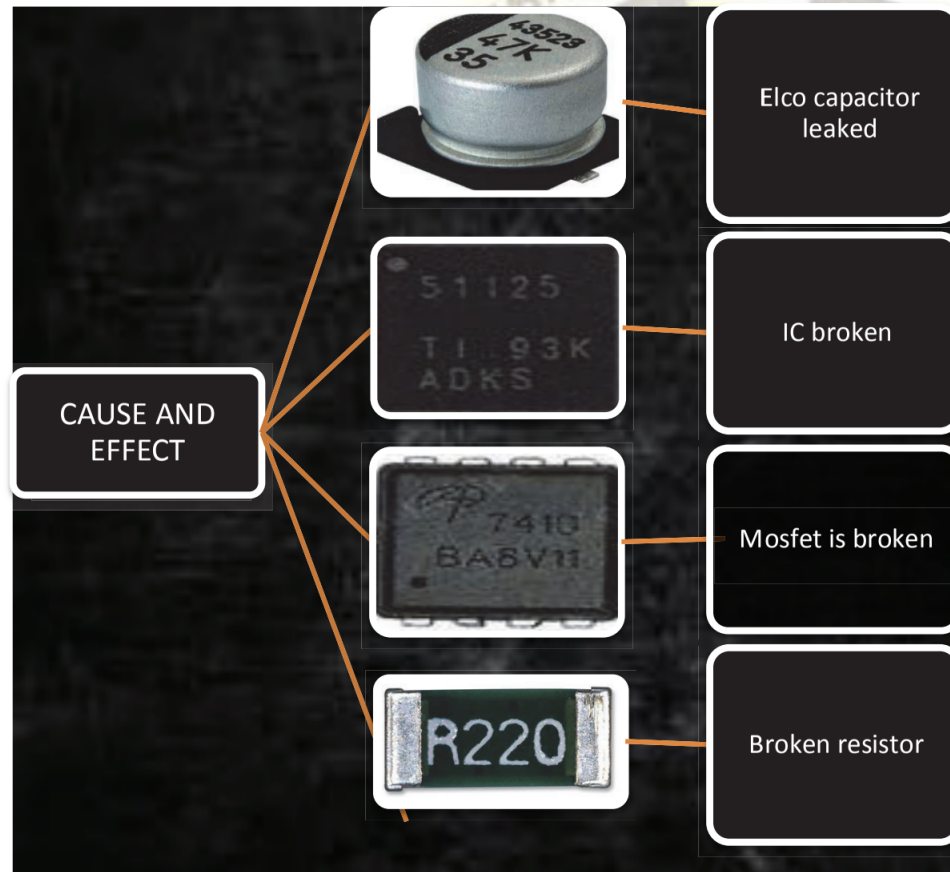
K2 3V AND 5V VOLTAGE DAMAGE



CHARACTERISTICS OF 3V and 5V DAMAGES SHARED INTO 3 PARTS:

1. No voltage 3V & 5V.
2. The voltage is only 3v or vice versa, only 5v.
3. The voltage drops which should be 3v / 5v to 1.24v etc.

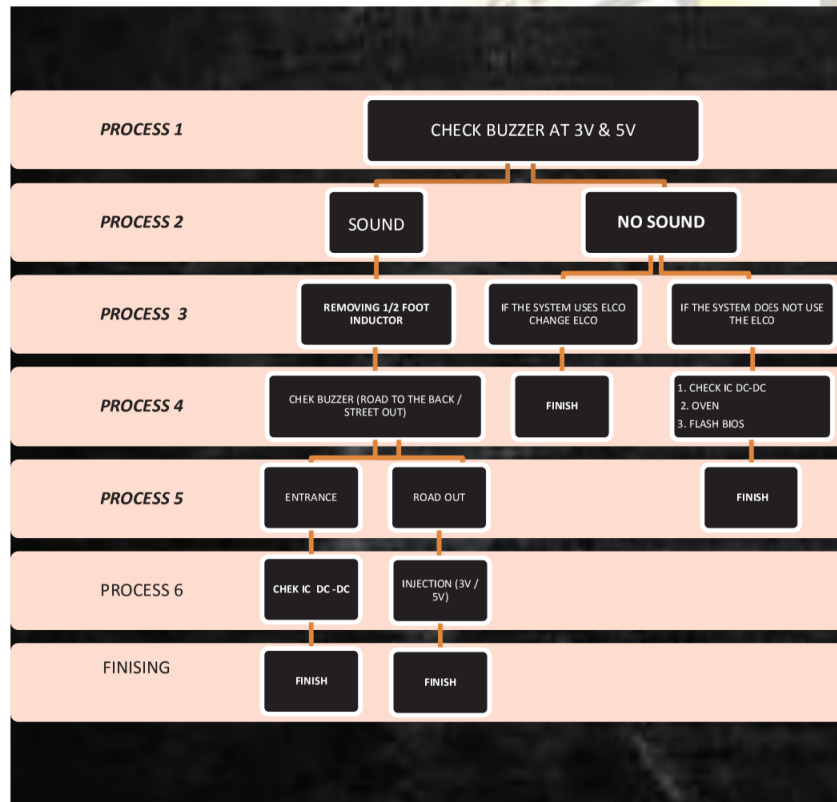
CAUSE AND EFFECT



CAUSES OF PROBLEMS IN CHARACTERISTICS OF DAMAGE IN THE MOST COMMON 3V & 5V SYSTEMS

1. Elco (where is the position as a cargo store & cooping).
2. IC driver (IC power is in charge of ordering mosfet N - Channel to reduce the tension of 3v & 5v.
3. Mosfet N-channel (which functions as a voltage drop). In the case of mosfet damage, it is rare for cases of 3v & 5v to be lost except for short 19V cases.
4. Resistor (usually as a prisoner in the path of Vin before the voltage entering the IC is first resisted by a resistor). In some other brands also use diode component types

EXECUTION OF DAMAGE 3V & 5V



STREET ENGINEERING OVERCOME DAMAGE 3V & 5V

1. Check the buzzer in the 3V & 5v inductor
CONCLUSION (sound & no sound)

If sound

release the inductor then do the test again and then get the second conclusion, that is the sound in the back lane or the outer lane when the back track checks mosfet and ic and if the sound goes directly to the outside lane inject.
NOTE: sound value or diode value (below 0.10).

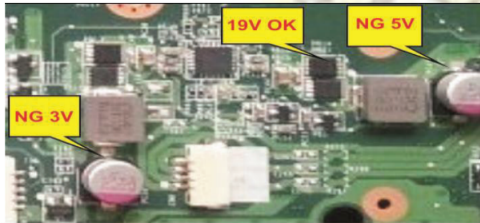
If it doesn't sound

If you use elco replace elco and if you don't use elco check replace the ic driver or before changing the ic driver you can first flase the bios. Finish.

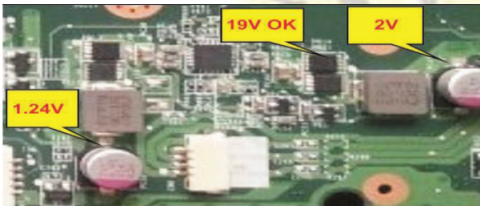
Note: the scope of checking for 3v and 5v damage is only in that part of the system except when injecting.

STUDY OF 3V & 5V PROBLEM CASE

(KBTI REF 2018 Level 2.2)



There are 3 classic cases of 3V & 5V damage including **the first** case as shown in the picture next to the measurement results of 19V measurement, ok but 3V & 5V NG or no voltage out.



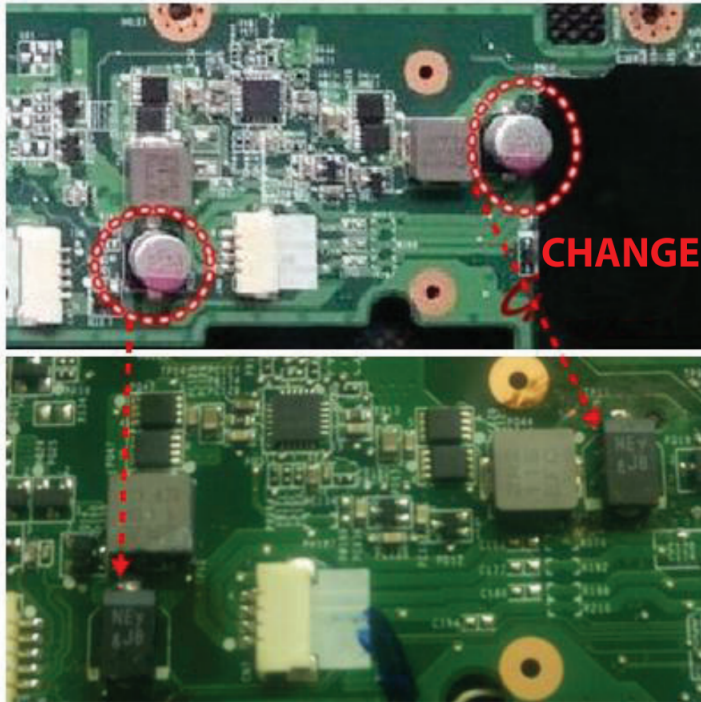
The second case 19V is ok. 3V & 5V voltage drops to 1V or 2V - / +.



The third case 19V is ok. 5V is okay while 3V is bad / does not come out and vice versa.

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From the 3 cases above the fast technique / road technique use 2 techniques below :



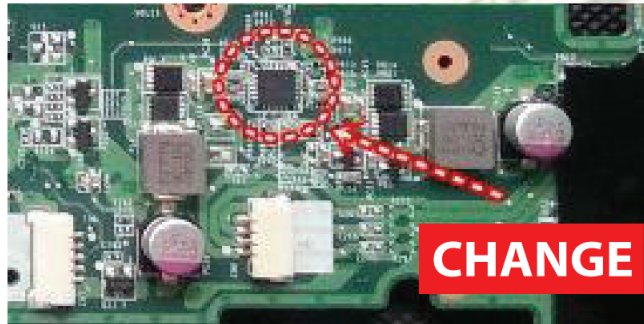
Replace the round elco / capacitor with box tantalum capacitor.

As in the picture on the side, Elco has been replaced by the tantalum capacitor

Note: pay attention to positive and negative poles (don't reverse)

Note: The value of the capacitor used box is 330mf

Or if the value of elco 220mf is replaced by a 330mf capacitor, the replacement value of the capacitor is equal to or greater than the value of the capacitor that will be replaced better, which should be a benchmark is the value must be the same as the capacitor that will be replaced or the value is better & don't be lower.



If the capacitor in the 3V & 5V section uses the tantalum type or does not use the Elco capacitor type as in the next side then the execution technique is directly to the second level, namely the oven motherboard (open oven technique) by replacing the DC DC 3V & 5V IC.

Note:

1. IC code is prioritized the same

2. You can remove the IC plug perfectly (fast, safe, neat, clean). IC position should not be reversed by means of the round point on the IC must be the same as the point on the motherboard pcb & foot - the IC leg is sure that no one unites / connects to the other leg because if this happens it will be fatal.

Note :

1. The above technique applies to all laptop brands and types **except Sony Vaio.**
2. For Sony Vaio laptop brand series with characteristic processor using dual core to i7. Those techniques at the above will go to 3rd after CMOS and oven reset. Because in the field we often find special cases like Sony Vaio brands losing 3V and 5V enough to reset CMOS (just remove CMOS and then reinstall) the case is complete. If the CMOS reset case is not finished then step 2 is in the oven, and after oven case, the above technique is only done (replace the DC-DC capacitor & IC).
3. This technique is street technique (fast & extreme technique). Requirements before following the tutorial instructions master the technical management / pull out the components correctly.
4. If all the techniques from Step 1-3 cases have not finished / done. Then do the next step by checking the 3V & 5V circuit deeper (short 3V & 5V).

SHORT 3V & 5V

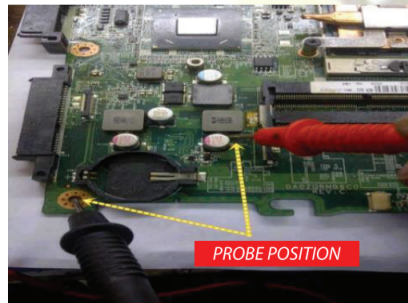


Short in the circuit / in the 3V & 5V output line if we use the PSU, then the PSU value is already visible with features such as the picture next to normal Voltage 19V ampere / current not normal 0.160 - / + (Less or more after the ampere value in for 100 examples **0.160** - **0.165** - **0.150**). And the current indicator **[CC]** will turn red or blink).

Characteristics PSU values like this in the field occur a lot because of damage to IC DC - DC 3V & 5V heat (do detection chip / touch on IC DC-DC 3V & 5V if found hot then do IC replacement).



For testing 3V & 5V circuits in addition to the ampere PSU detector method we also use a multimeter gauge to get accurate results by setting the multimeter on the buzzer / diode mode scale.



Red probe on 3V / 5V inductors & black probe on ground / screw holes. (move 1 - 2 screw holes because not all screw holes are ground)

The mandatory 3V / 5V inductor cannot sound. and if at this point there is a buzzer sound when testing, you can make sure there is a short circuit problem on the 3V / 5V circuit or on the output line.

Note: when doing this method the motherboard is not connected to the battery / adapter / PSU. Because what we measure is not the voltage but the tracking circuit.



To make sure the output / input had problems by removing the 3V / 5V inductor that sounds a buzzer or just lifts next to the inductor's foot section, *see picture*

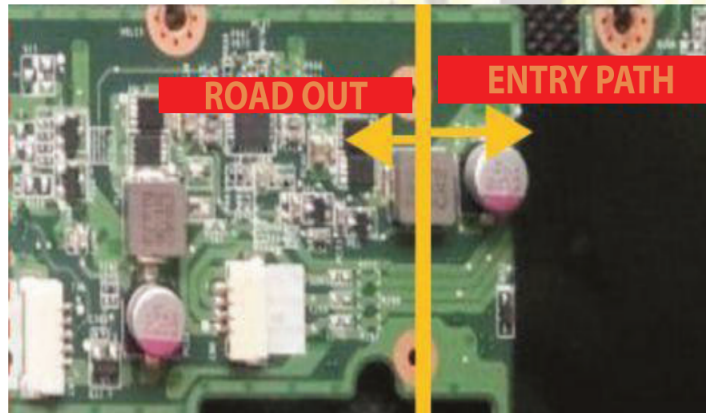
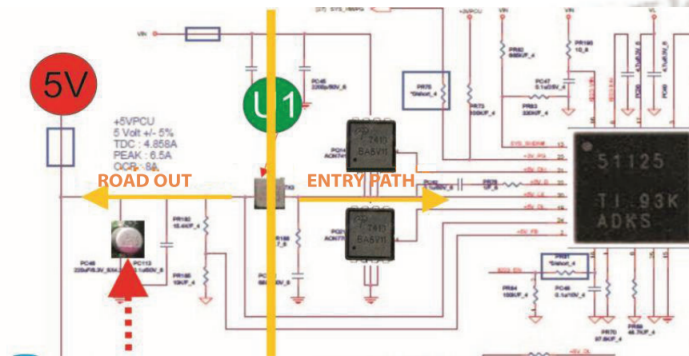
We apply the inductor on the 3V & 5V circuit to be the output / input bridge and input / voltage input.

S2 in the figure is a 3V & 5V output line that is connected to a 3V & 5V capacitor where after passing the 3V / 5V capacitor it will spread to circuits that need it and **S2** if we measure it will react short if there is a short circuit on another 3V / 5V power supply.

For example: If there is a short circuit on another example, USB that requires a voltage of 5V and on this USB circuit there are components that are problematic in this case is short, if we measure at the point **S2** it will react short. This happens because 5V on USB is sourced from a 3V / 5V circuit.

We simulate **S1** only is the entry point even though the actual **S1 & S2** circuit is an output line generated from 3V & 5V circuits, to facilitate the discussion of **S1** we consider it as an entry point after our inductor / bridge breaks up either off the side or releases the inductor directly from the motherboard.

We are simulating again after the inductor is broken which reacts is **S1**, then checking enough to the back of the component before passing through the inductor, namely mosfet and IC DC - DC. In the field alone, short on **S1**, this rarely happens. Up here, I hope you understand if you don't wait for the 2020 book review. It's been a long time. Yeah, you have to understand.



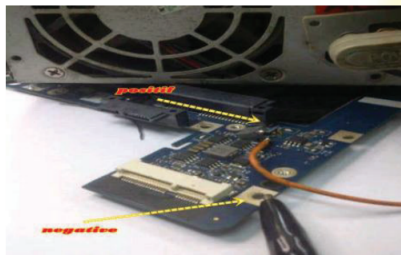
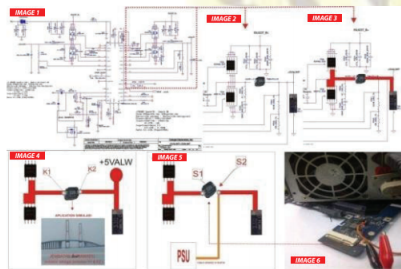
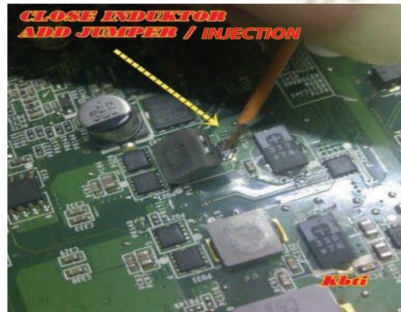
Look at the picture on the side and we reset it again. The exit is towards the 3V / 5V capacitor and then spread to the circuit that requires 3V / 5V power supply.

While the Entrance is the path leading to mosfet N - parallel channel then To IC DC-DC 3V / 5V.

An example of a picture on the side is a case of buzzer sound on the 5V line. Because the case in the field of the two inductors on the 3V / 5V line can be one sound inductor or even both. Then how to determine which of the two inductors is 3V and which one is 5V?. (Open the book how to read schematic)

To overcome the short 3V / 5V path, either an inductor part is short or even both are enough with the injection method because if you use the manual method / measure **one by one** components on all parts of the motherboard in this case it will be more difficult because 3V & 5V is not like 19V which is only on the bypass line. 3V & 5V in addition to the system generator always also functions as a 15V & VS (power switch) generator. About **VS** open book schematic diagram.

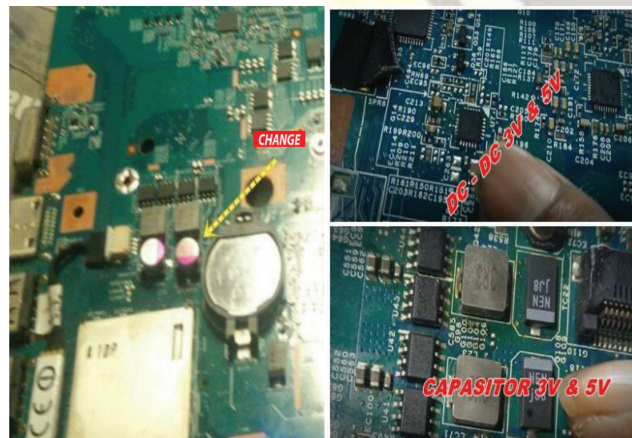
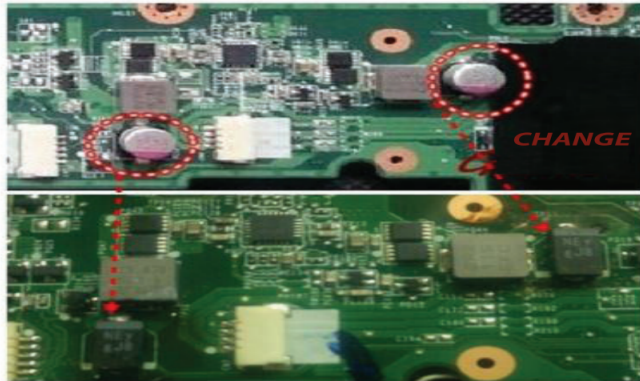
3V & 5V INJECTION TECHNIQUES



If after the inductor is lifted next to the part & the sound is found in the exit section, the execution is enough by using the injection method.

1. Remove the sound inductor / lift one leg.
2. Setting the PSU to 3V
3. Modification of the PSU to two branches (for injections & universal jack mode).
4. Set PSU positive cable to the 3V & 5V capacitor or to the inductor foot that has been lifted (see next picture).
5. Modification of the negative cable PSU uses a type of clamp to attach to the ground / screw holes. This is so that if a reaction occurs and it is found that the component is hot / smoky then we immediately remove the cap connected to the screw hole. We can also modify the ground cable before plugin it into connected to the switch so that it is safe enough just to turn on & turn off the switch.
6. Schematic understanding is needed to determine the sound inductor is 3V / 5V. because if it turns out that the sound is a 3V inductor, the setting on the PSU uses a voltage of 2.5V and if it turns out that the sound is a 5V inductor then the voltage used is 4.5V. Or if we are poor, it is difficult to open the schematic plus do not understand schematic so the settings just use 3V because this is more than enough.
7. If we don't have a PSU, then an alternative can use an used PSU PC as shown on the side (how to modify the PC PSU to execute laptop service open the tool modification material).

CASE 3V & 5V



Case:

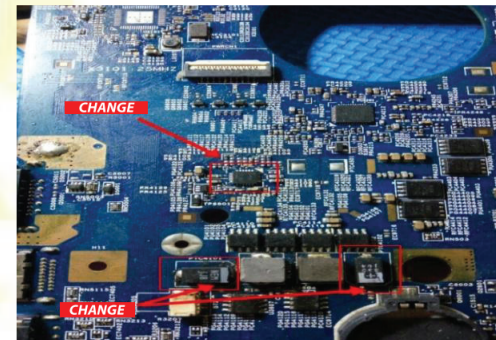
No 3V / 5V or 3V / 5V voltage is drop.

Solution:

Replace Elco capacitor with tantalum capacitor (recommendation of 330MF tantalum capacitor value).

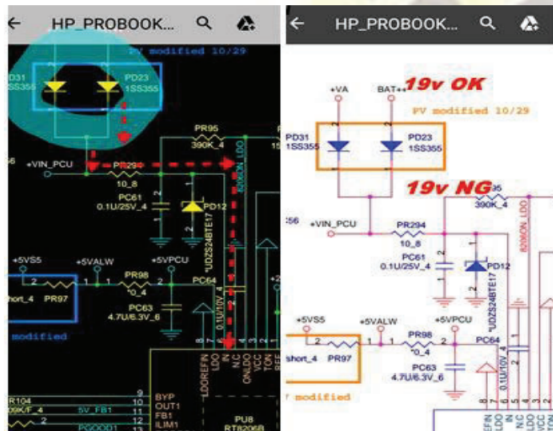
This case often occurs in the Acer D270 brand. Acer aspire 4750/4752 series and on several other brands and types. With the characteristics of capacitor types on 3V & 5V systems using ELCO types.

If tantalum capacitor replacement did not solve the problem, another fast technique is to directly replace the DC IC - DC 3V & 5V as shown below: Among the IC types that are often problematic in the field are: TPS 51125, RT 8223 SERIES / EQ = DF & TPS 51120 SERIES. The characteristics of this IC are if it breaks heat / short tracking in the 3V & 5V tracking output.

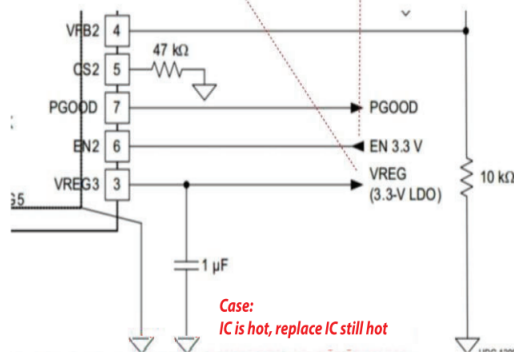
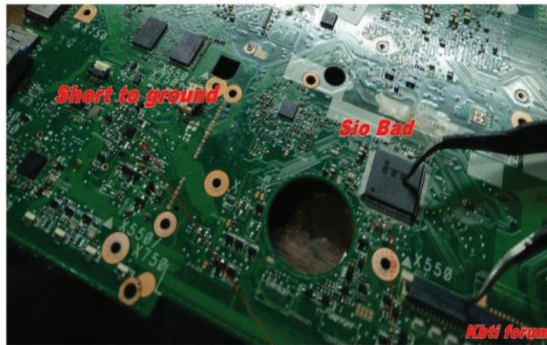


The 2 cases below require understanding schematic diagrams

The two cases below were carried out after passing the capacitor replacement step, replacing the IC DRIVER and case oven process but not yet.



For the advanced case, 3V & 5V problem is not present because the safety component / resistor and rectifier / diode are broken or damaged. Because the characteristics in general of this component flow voltage and are not connected to ground, if this component is damaged it will decide the voltage is not short because it is not connected to ground. For example we can see in the picture next to the HP PROBOOK SERIES brand, the 3V & 5V IC problem does not work because 19V functions as a working voltage for a disconnected IC, which causes the component diode to be damaged, the diode change solution. This technique can be applied to other brands and types of laptops.



Advanced cases of complicated methods 3V & 5V problems are not present, because VREG that functioned for the IC resource itself does not work. This VREG voltage is included in the standby mode voltage. Including all input & output signals such as EN & the others in 3V & 5V circuit, the standby signal mode is due to the 3V & 5V voltage itself being the ALW / STANDBY / VOLTAGE REQUIRED THERE BEFORE SWITCH ON.

Need to know there are several types of voltage on the motherboard (Working voltage, command voltage & confirmation voltage) all these voltages will be integrated in dual mode (standby and VS / Power switch). If you start to get dizzy, I also start to be confused to simplify the explanation of this material so that the execution process is immediately:

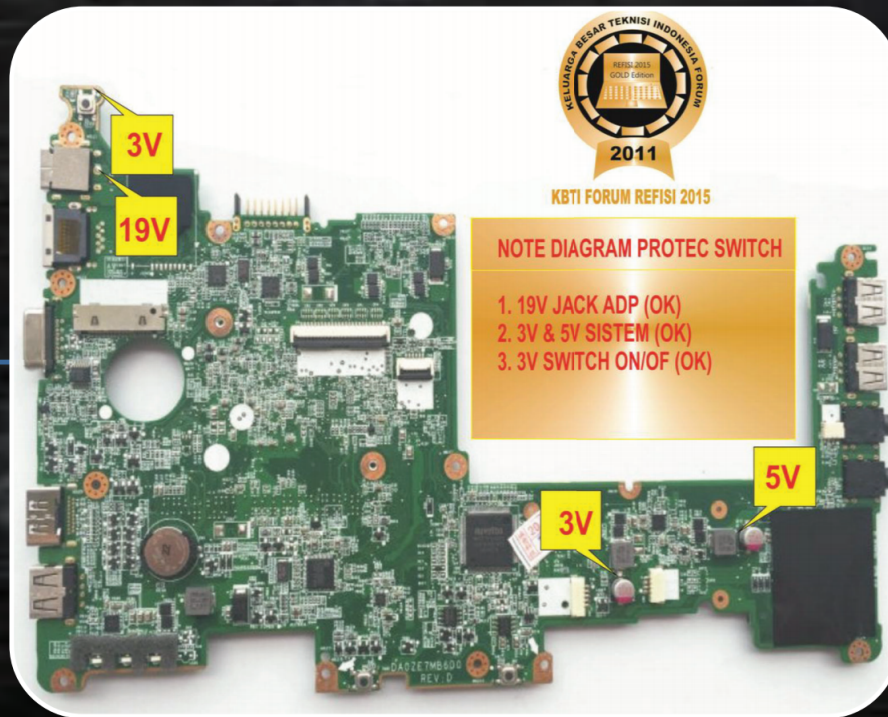
VREG 3V & 5V lines must have no buzzer sound reaction when measured as well as paths on inductor components on 3V & 5V circuits. If this line sounds in the case of this case VREG 3.3V LDO in the picture beside a short reaction, then the execution we have to do is by injection at point VREG 3.3V LDO.

When IC injections must be released and cases that often occur in the field are the causes of the VREG pathway caused by SIO short problems. And in the case of images besides, SIO replace close case on the Asus series. SIO short has no impact on short 19V

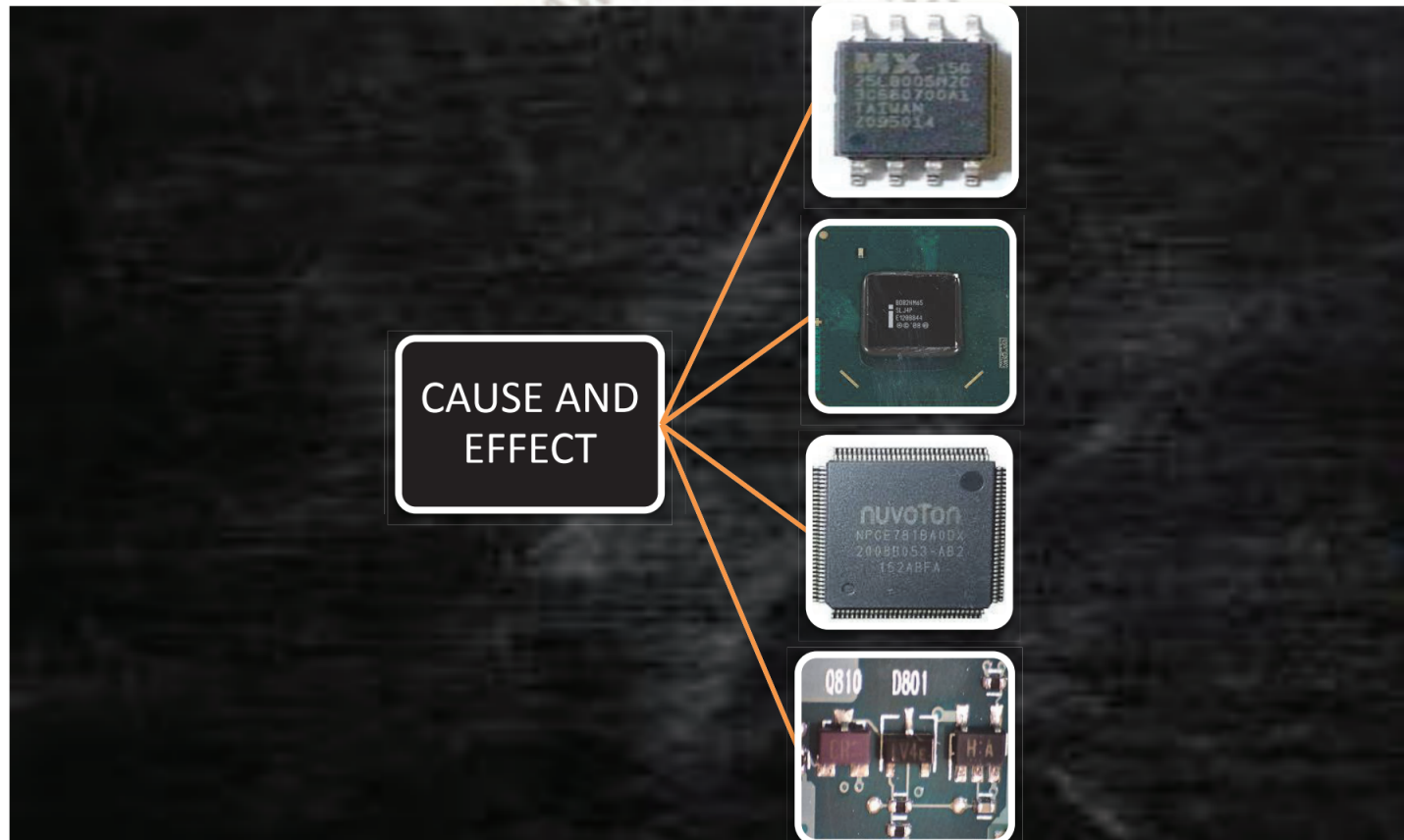
This technique can be applied to other brands and laptop series.

K3 PROTECT SWITCH & POWER FLASH**Characteristics**

All voltage should be normal but the laptop is still totally dead

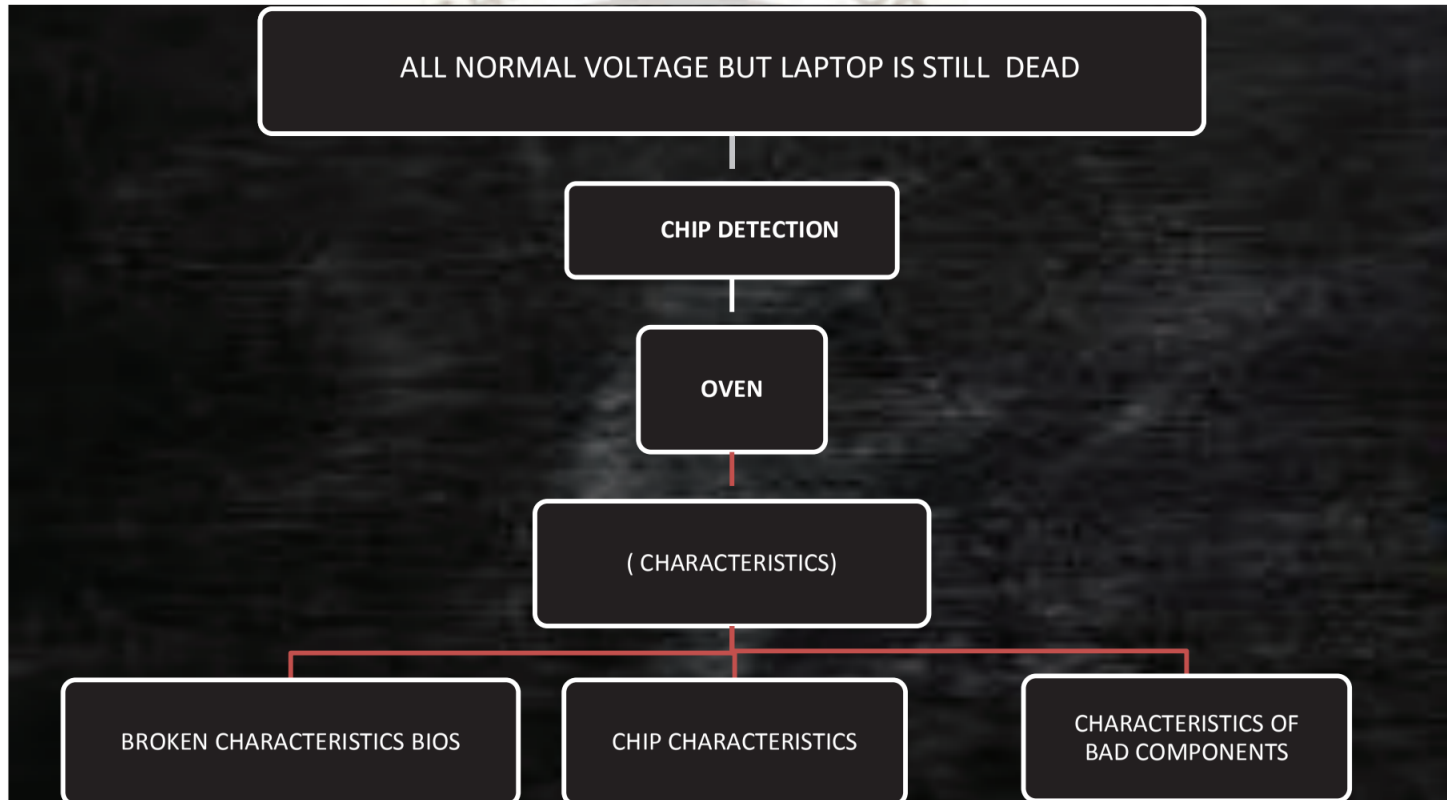


CAUSE AND EFFECT

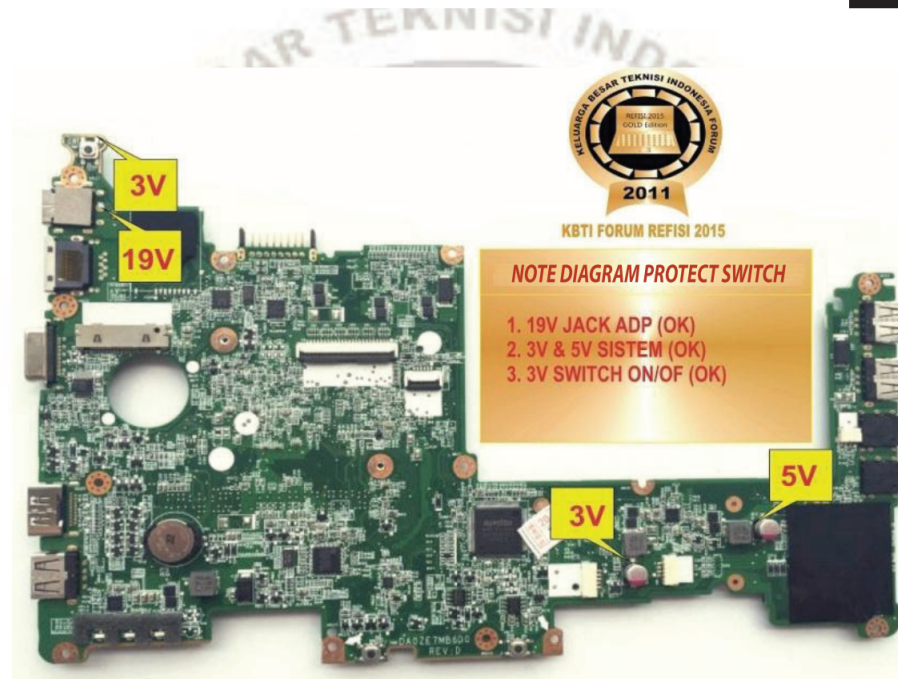


Laptop Service Courses Internal
online & offline

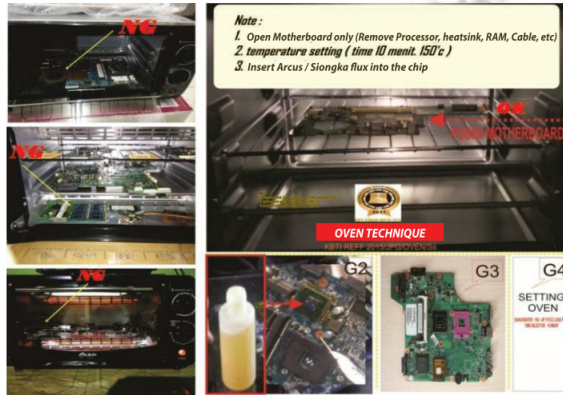
EXECUTION



PROTECT SWITCH EXECUTION



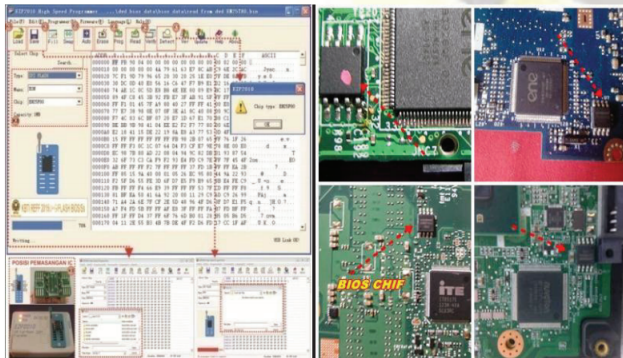
Protect switch damage characteristics in case of total dead is required voltage all normally OK. There is no short reaction / voltage loss on the PSU. But the laptop is totally dead / when pressed on / off there is no reaction on the indicator light.



1. OVEN

This is the first time for execution of damage due to protect switch points. Because this technique is quite easy, simple & fast. This method shown in the description on the picture.

The oven technique is also applied to the case of strange damage and no display, advanced damage method and characteristics open the oven technique material in the display no damage

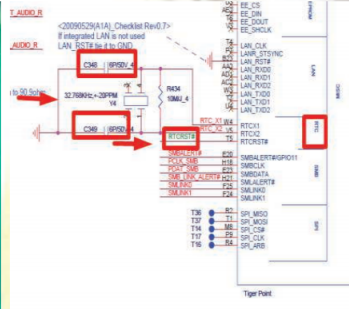


2. FLASH BIOS

Flashing bios is the second step if the problem still did not worked. For those who already have flying hours in the world of laptop service, maybe in some brands and types of laptops will be missed. But for those who are still beginners, it's not wrong if we immediately flash the bios. For power flash cases (mains power blinks) flash bios to be the first step should be done.

Flash bios are also used in several other cases such as paswoord resets, hank cases in logos, display problems.

Methods and characteristics open books for reading schematic.



3. CHIPP CHEK

The characteristics of the chip damage on the damage characteristics of the protractor are marked by heat insulation when we press the switch, but no reaction indicator lights up.

Chip checker can be done with chip detection, as long as chip short methodology. Check physical chip and measurements on the RTC CIRCUIT section.

Methods and characteristics open the book for reading schematic

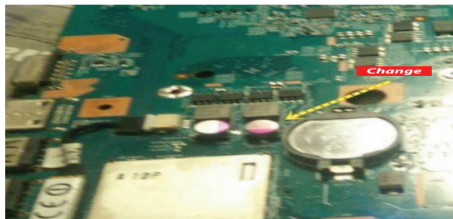


4. SIO

Characteristics of SIO damage on switch characteristics are characterized by heat insulation when we press the switch, but no reaction indicator lights up.

Check the full SIO work in standby mode (always power and S5 on) as shown.

Methods and characteristics open the book for reading schematic



5. CAPACITOR 3V & 5V

This method is specifically for switch damage with 3V & 5V characteristics the capacitor uses ELCO type. Although 3V & 5V OK, for protect cases, replace Elco 3V & 5V with a 330 MF tantalum capacitor. This is the first step if the 3V & 5V protection case is found using the TYPE ELCO capacitor.

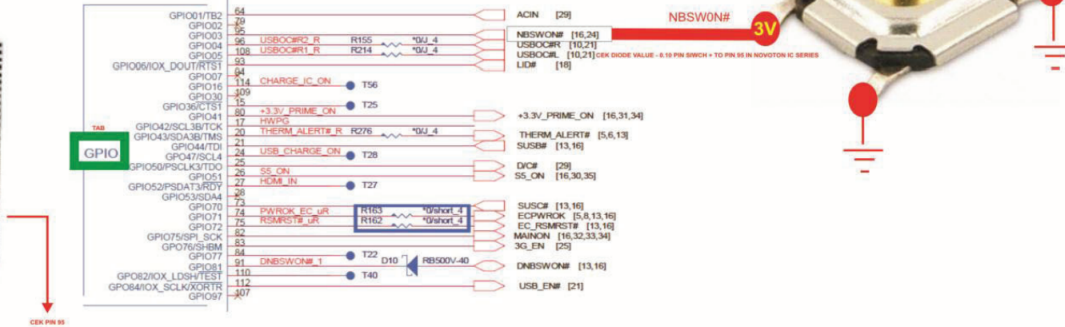
K4 SWITCH ON /OFF PROBLEM

GRAPH SIMULATION



KBTI FORUM REFISI 2015

SWITCH ON / SW ON



CAUSE AND EFFECT

Disconnect (check the path from switch to SIO using a digital multimeter on the scale of the buzzer. "If no sound can be confirmed the path is broken") pin and signal name on schematic: NBSWON # - SWON-in description (GPU IO). Damage to switch on / off & tracking in the field is only 1 in 10 cases, the checking method in switch on / off can be an analysis for additional checks on protect switch damage.

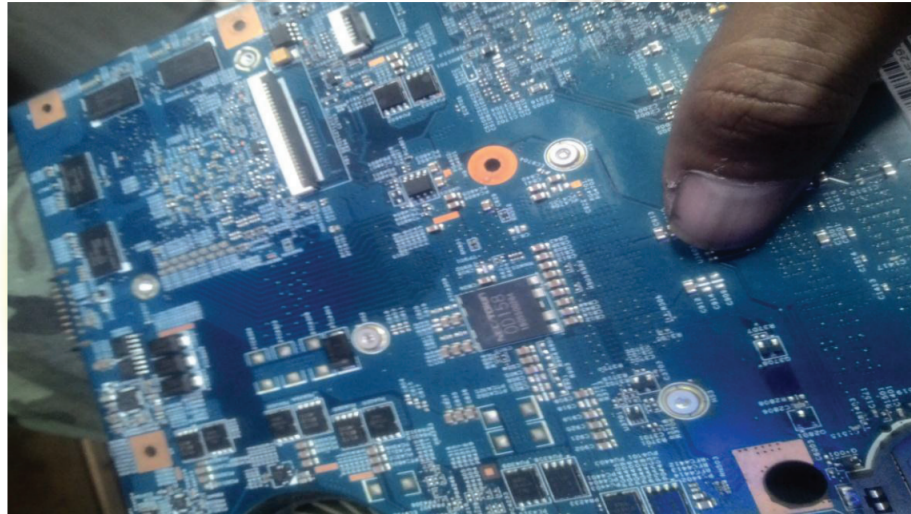
**APPENDIX - ANNEX
CHIP DETECTION TECHNIQUES**

Chip detection is a street technique where this process is carried out by searching for a heat source when the adapter is plugged into the motherboard with the motherboard removed from the casing and then looking for heat to the center points with an analysis of the suspected / damaged / component problem. Terms and things that must be considered in the hand detection process.

- 1. Wear flip flops.*
- 2. Using voltage*
- 3. Avoid short circuiting*
- 4. Contact / search to center points (mandatory voltage area, Chipset and IC power)*
- 5. Don't push the component too much because when overheating / overloading our hands can blister.*

Chip detection is worked for almost all the damaged characteristics (total / protect switch, no display, etc). Chip detection is also done when doing injection technique.

Chip detection technique (touching MOSFET components and suspected problematic points)



Note :

Heat components will feel very insulating.

CASE STUDY & ADVANCED METHODS

Characteristics broken



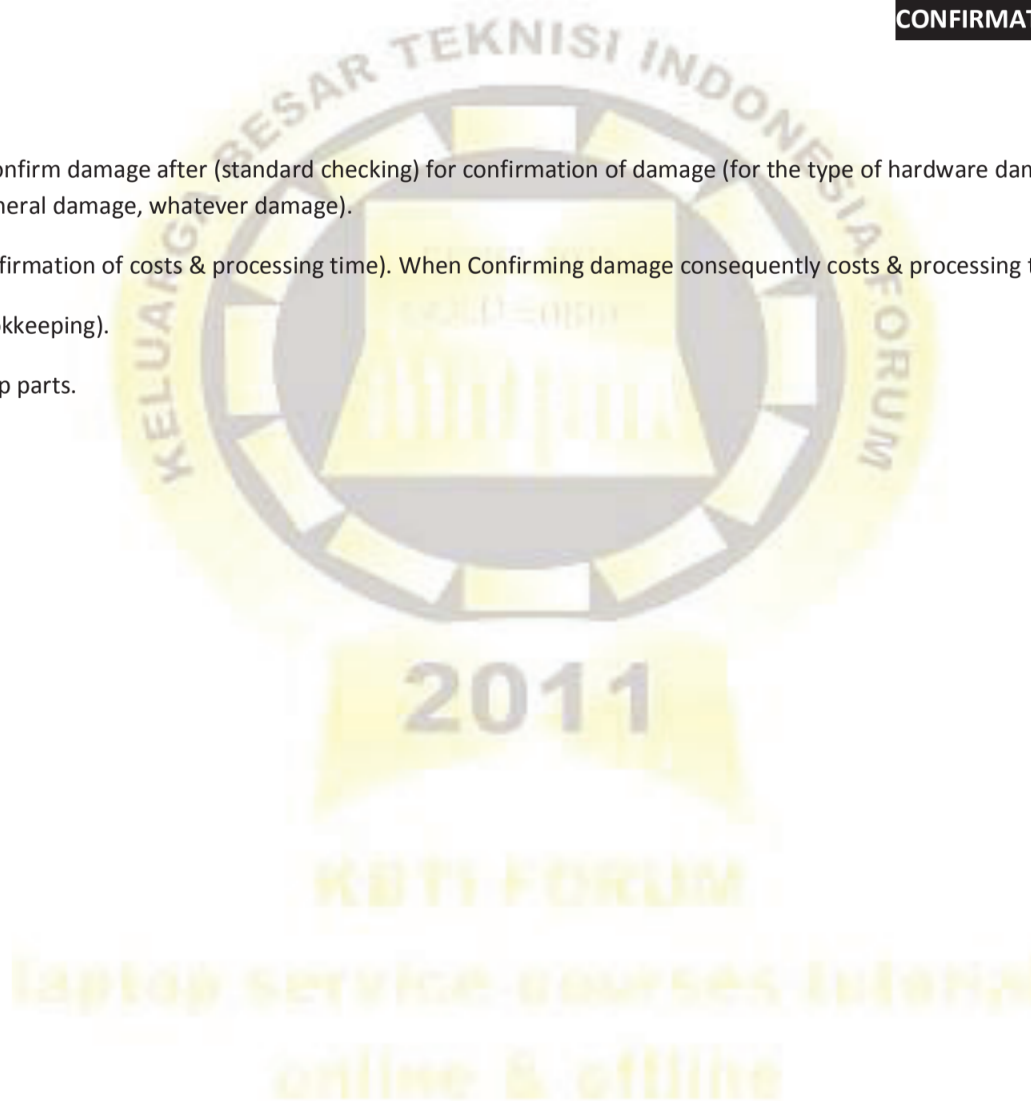
TECHNICAL METHOD

This method is done in two ways:

1. Using the diode value method check the short chip on the GPU CORE inductor, each chip (the technique is the same as checking short 3V & 5V).
2. Using the injection method (the same way as injecting in the case of 3V & 5V but the difference is in the stress that is used (use voltage 1V). This technique is very extreme and dangerous contact the author for security execution.

CONFIRMATION MANAGEMENT

1. Confirm damage. Confirm damage after (standard checking) for confirmation of damage (for the type of hardware damage, confirm to the customer, only general damage, whatever damage).
 2. Administration (confirmation of costs & processing time). When Confirming damage consequently costs & processing time.
 3. Administration (bookkeeping).
- Total data for all laptop parts.
4. Warranty status.
 5. Cancel (tips).



SERVICE PROCEDURE

1. Management confirmation (open book & video management confirmation).
2. Check adapter & battery (replace adapter & remove battery).
3. Reset Power (press switch on / off for 5 seconds) note: without adapter & battery.
4. Disassemble the laptop & reset power as in technique No. 3.
5. Management confirmation (open book & video management confirmation).
6. Check the motherboard, data cable etc. (times there is rust. Dirty. The cable is on fire. Component is on fire / bad physical).
7. Detection of the chip (touch looking for heat on the component (this step uses an adapter and presses the power button).
8. Cleaning (cleaning the machine with thinner, this step if the motherboard is dirty).
9. Measurement & analysis.
10. Management confirmation (open the management book confirmation).
11. Execution.
12. Running.
13. Confirmation
14. Finishing & warranty status.



ALHAMDULLILAH

Good job

GETOTHERBOOKS

